



NETWORK 1275 Danner Dr Tel:330-562-7070
TECHNOLOGIES Aurora, OH 44202 Fax:330-562-1999
INCORPORATED www.networktechinc.com

ENVIROMUX[®] Series

ENVIROMUX-SEMS-16

Server Environment Monitoring System

Installation and Operation Manual

Firmware Version 2.2



TRADEMARK

ENVIROMUX is a registered trademark of Network Technologies Inc in the U.S. and other countries.

COPYRIGHT

Copyright © 2005-2007 by Network Technologies Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written consent of Network Technologies Inc, 1275 Danner Drive, Aurora, Ohio 44202.

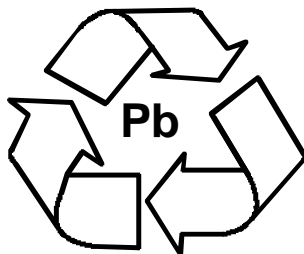
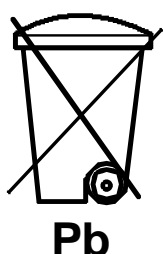
CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.



WARNING

This unit contains a sealed lead acid battery. Battery maintenance must be performed by an authorized trained technician. Always follow local laws and regulations regarding the disposal of this unit.



CAUTION

RISK OF ELECTRIC SHOCK. Do not remove cover. No user serviceable components inside. All repairs and maintenance must be performed by authorized service personnel only.



CAUTION

Turn OFF power to the ENVIROMUX-SEMS and discharge your body's static electric charge by touching a grounded surface or use a grounding wrist strap before performing any connections to the unit.



CAUTION

For continued protection against fire and electric shock this device should only be connected to an AC mains outlet equipped with a proper ground terminal. In countries where the AC mains outlet is not equipped with a proper ground terminal, the rear panel ground must be connected to a proper ground.

TABLE OF CONTENTS

ENVIROMUX-SEMS-16	1
Server Environment Monitoring System	1
Installation and Operation Manual	1
Firmware Version 2.2	1
Introduction	1
Materials	2
Available Sensors	2
Supported Web Browsers	5
Features And Functions	6
Installation	8
Rack Mounting Instructions	8
Sensor Attachment	8
Connect Output Devices	10
Terminal Connection for RS232	11
Ethernet Connection for Remote User Control	11
GSM Modem Connection	12
Cascaded Installation via Direct Connection	12
Power cord Connection	13
Dual Power Option	13
Overview - Use And Operation	14
Sensors	14
IP Assignment	14
User Management	14
Alerts	14
Data and Event Logging	15
Email	15
Syslog	15
SNMP	15
External GSM Modem	15
Power-on/Reset Operation	15
Out-of-Box Operation	15
Expandability	15
Device Discovery Tool	17
Use and Operation via Web Interface	18
Log In and Enter Password	18
Monitoring	19
Summary Page	19
Power Supplies	20
Power Supply Alert Configuration	20
Internal Sensors	22
External Sensors	22
External Sensor Configuration	23
Contact Sensors	25
Digital Inputs	27

Output Relays	28
IP Devices.....	29
Web Cams	30
Administration	31
Settings-Enterprise Setup.....	31
Settings-Network Setup	32
Settings-SNMP Agent.....	33
Settings-Date and Time	33
Settings-Serial Port Setup	34
Users-Root.....	34
Users- Add User	35
Users-Edit Groups	37
Advanced-Cascade Configuration.....	38
Advanced-Configuration File	40
Advanced- Update Firmware	41
REBOOT/SHUTDOWN	42
Log.....	43
View Event Log.....	43
View Data Log	43
Log Settings.....	44
Links	45
Log Out.....	45
RS232 or Telnet connection.....	46
RS232 Connection.....	46
Telnet Connection.....	46
Telnet via HyperTerminal.....	47
Telnet via Command Prompt.....	47
Log In to the Main Menu	47
Main Menu	48
Configure Enterprise Submenu	48
Display Network Settings.....	48
Network Configuration Submenu.....	49
Changing MAC Address	49
Toggle DHCP Mode.....	49
Changing IP Address.....	49
Changing Subnet Mask	50
Changing Default Gateway.....	50
Changing DNS Server Address.....	50
Changing Alternate DNS Server Address	50
Changing HTTP Server Port settings	50
Changing SMTP server settings	50
Change Password	51
Enable/Disable Telnet Server.....	51
SNMP Agent Configuration Submenu	51
Enable/Disable SNMP Agent.....	51
Enable/Disable SNMP traps	52
Read-Only Community String.....	52
Read-Write Community String.....	52

Configure Date & Time Submenu	52
Select Timer Source	52
Change Primary SNTP Address	52
Change Secondary SNTP Address	52
Change Current Time	53
Change Current Date	53
Set Time Zone	53
Display System Time	53
Monitoring Submenu	54
Power Supply	54
Internal Sensors	54
External Sensors	54
Digital Inputs	55
Output Relays	55
Command Output Relays	55
IP Devices	56
Restore Settings to Defaults	56
Reboot	56
Logout and Exit	56
Upgrade Firmware	56
Front Panel LED Indicators	59
System Reset Button	59
Battery Backup	60
ENVIROMUX-SEMS-16 specifications	61
Front Panel Interface	61
RJ45 Sensor Inputs	61
Digital Inputs	61
Output Relays	61
Beacon Port & Siren Port	61
Expansion Ports	61
Control Serial Port	62
Auxiliary Serial Port	62
Auxiliary Power Port	62
Ethernet Port	62
Back-Up Battery	62
General Specifications	62
TCP/IP	62
Sensor Specifications	63
Internal Temperature Sensor	63
Internal Humidity Sensor	63
Internal Power Sensor	63
External Temperature Sensor	63
External Humidity Sensor	63
External Temperature and Humidity Sensor	63
Liquid Detection Sensor	64
Smoke Sensor	64
Vibration Sensor	64
Motion Sensor	64

Glass Break Sensor	64
Door Contact Sensor	65
Accessory Specifications	65
Digital Keypad	65
Key Station	65
Electric Strike	65
Alarm Beacon	65
Siren	66
Panic / Emergency Button	66
Wiring Methods	67
PC-to ENVIROMUX Crossover Cable	67
RS485 Sensor Cable	67
Contact Sensor Wiring	68
Other wiring examples	69
Troubleshooting	73
Recycling Information	74
Index	75
Warranty Information	76

TABLE OF FIGURES

Figure 1- Typical Application	7
Figure 2- Mount ENVIROMUX to a rack	8
Figure 3- Sensors connected by cables with RJ45 connectors	8
Figure 4- ENVIROMUX-LDS sensor mounting	9
Figure 5- Contact sensor wired to RJ45 socket	9
Figure 6- DIGITAL IN Terminal Connections	9
Figure 7- Connect visual and audible external indicators	10
Figure 8- Install additional devices to output terminals	10
Figure 9- Connect a terminal for direct RS232 serial communication	11
Figure 10- Connect ENVIROMUX to the Ethernet	11
Figure 11- Aux port and power for GSM modem connection	12
Figure 12- Cascade up to 4 systems for centralized sensor monitoring	12
Figure 13- Connect the power cord	13
Figure 14- Power connections for ENVIROMUX with Dual Power Option	13
Figure 15- Device Discovery Tool page	17
Figure 16- Login prompt to access web interface	18
Figure 17- Initial "Welcome" Page	18
Figure 18- Summary Page	19
Figure 19- Power Supply status page	20
Figure 20- Power Supply alerts configuration	21
Figure 21- Internal Sensor Reading	22
Figure 22- Sensor Configuration Page	23
Figure 23- Add External Sensor	25
Figure 24- Contact Sensor Configuration	26
Figure 25- Digital Input Configuration	27

Figure 26- Out Relay manual control page	28
Figure 27- Output relay configuration	28
Figure 28- IP Device Configuration	29
Figure 29- Web Cams Configuration	30
Figure 30- Enterprise Setup Page	31
Figure 31- Network Setup Page.....	32
Figure 32- SNMP Agent Setup Page	33
Figure 33- Setup Date & Time	33
Figure 34- Serial Port Setup Page	34
Figure 35- Edit user profile for root user	34
Figure 36- Add New User Page	35
Figure 37- Edit User Profile.....	36
Figure 38- Edit Groups Page	37
Figure 39- Cascade configuration with local slaves	38
Figure 40- Master with local slaves.....	38
Figure 41- Cascade configuration with Ethernet slaves	39
Figure 42- Master with Ethernet slaves.....	39
Figure 43- ENVIROMUX Configuration Page	40
Figure 44- Update Firmware Page.....	41
Figure 45- Reboot/Shutdown page	42
Figure 46- Reboot confirmation prompt	42
Figure 47- View Event Log.....	43
Figure 48- View Data Log	44
Figure 49- Configure Log Settings	44
Figure 50- Configure Links to Favorites	45
Figure 51- RS232 Port Properties Configuration	46
Figure 52- Telnet connection via HyperTerminal	47
Figure 53- Telnet Main Menu	56
Figure 54- Front panel LED indicators	59

INTRODUCTION

The ENVIROMUX-SEMS-16 Server Environment Monitoring System (ENVIROMUX) provides a way to supervise, from a remote location, the environmental conditions and security in cabinets and rooms containing servers, hubs, switches and other network components. Input data is filtered, collected, analyzed and processed to instantly and accurately display the status of the room. The user is able to specify parameters for all monitored conditions: if the parameters are exceeded, the unit will signal an alarm, which may include several pre-defined processes.

The ENVIROMUX-SEMS-16 monitors the internal temperature and humidity of the unit, giving readings that can be used as an estimate for the conditions of other nearby rack components. Additionally, it is capable of monitoring a maximum of 16 external sensors (available from NTI) and up to 8 additional contact-type sensors (often called open-collector, contact-closure, relay-style, normal-open, or normal-closed). ENVIROMUX includes 4 output relays to control devices such as door locks, keypads, and circulation fans and two outputs specifically for the connection of an alarm siren and/or beacon.

The external sensors sold by NTI will monitor temperature and humidity, detect smoke, motion, vibration, glass breaking, a door opening, and detect the presence of water on a flat surface (such as the floor). The temperature and humidity sensors will provide current readings as well as alerts when thresholds are exceeded. The remainder of the sensors will simply provide alerts. These sensors can be manufactured by any third party, provided the alert notification method is compatible. Each of the aforementioned NTI sensors will connect to the ENVIROMUX via RJ45 connectors and cat5 cable. The ENVIROMUX can also work with both 4-wire and 2-wire contact-style sensors (4-wire sensors require a power connection, 2-wire do not). Screw terminals are provided for the connection of external contact-style sensors.

The Ethernet will provide the main user interface for the ENVIROMUX-SEMS-16. The ENVIROMUX will provide data logging that can be viewed via a web browser and provide alerts via email, Syslog, SNMP traps, SMS text messages and front panel LEDs.

Features:

- Single user via RS232 or up to 8 users via Ethernet
- Connections include DB9 for RS232 and RJ45 w/ LEDs for Ethernet
- RJ45 connections for up to 16 sensors
- Screw terminals for up to 8 digital input devices and 4 digital output devices
- 12VDC provided for all digital inputs (50mA on terminals 1-7, 650mA on terminal 8 only)
- RJ45 Sensors include Temperature, Humidity, Temperature and Humidity, Water, Vibration, Smoke, Motion Sensor, Glass break detector and more
- Monitors server room environmental conditions remotely
- Alerts users of environmental faults (temp too high, water, etc) via email, Syslog, SMS messages, SNMP traps, Illuminated front panel LEDs, or notifications on a web page
- Provides control for devices such as door locks, keypad, or a circulation fan via digital outputs (1A / 30 VDC, .5A / 100VAC)
- Full configuration via web page
- Limited configuration via SNMP, Telnet or RS232 interface
- Browser independent (IE, Netscape, Mozilla, Opera)
- Outgoing mail using SMTP for alert notifications
- Configurable Alarms to match specific user schedule
- Local Authentication, SSL3
- Data logging to keep viewable record of events such as changes in the environment or user access
- Monitors (ping) up to 64 configurable IP addresses. Response Timeout and number of retries are user configurable for each address
- Flash upgradeable via FTP server or web page
- Internal temperature, humidity, and power sensors
- Two RJ45 connectors included for future expansion via cascading

NOTE: As of this release of the firmware, cascading is not supported in ENVIROMUX. This feature will soon be supported. See page 41 or 56 for instruction on how to upgrade the firmware when available.

Options:

- **Dual Power** – ENVIROMUX with two power connections for optional extra power source connection (see page 13) - add “-DP” to the model number (i.e. ENVIROMUX-SEMS-16-**DP**)
- **DC Power** - to install the ENVIROMUX in a Telecom environment. Add -48V to the model number (i.e. ENVIROMUX-SEMS-16-**48V**)
 - * Converter accepts 36~72VDC (48VDC nominal), positive or negative polarity.
 - * 3-pole screw terminal for connecting 48V input

MATERIALS

Materials included with this kit:

- 1- ENVIROMUX-SEMS-16 Server Environment Monitoring System
- 4- 10-32 x 3/8" pan head screws and 10-32 cagenuts (server cabinet mounting hardware)
- 1- Power Cord- country specific (2 power cords for model ENVIROMUX-SEMS-16-DP)
- 1- CD containing a pdf of this owners manual
- 1- Quick Start Guide

Materials required for connection but not supplied:

- Cables required for connection:
 - DB9 male to female standard serial cable wired straight through (pin 1 to pin 1, pin 2 to pin 2, etc..)
 - Cat5 for RS485 sensors with RJ45 connectors wired to the TIA/EIA-568B standard (see page 67 for specifications)
 - ENVIROMUX-2W-xx 2-wire sensor cables (pg. 4) for dry contact sensors
- Cables required for Expansion via Cascading:
 - Cat5 cable with RJ45 connectors wired straight through (pin 1 to pin 1, pin 2 to pin 2, etc..)

Available Sensors (Sold separately) :

- ENVIROMUX-STs Temperature Sensor
 - * Applications from 32°F to 122°F (0°C to 50°C)
 - * High resistance to external influences on the cable due to digital output signal
 - * Accurate to within $\pm 2^\circ\text{F}$ ($\pm 1^\circ\text{C}$)
 - * Includes mounting hardware
 - * Connects to RJ45 sensor ports only
 - * Maximum CAT5 cable length: 1000 ft.
- ENVIROMUX-SHS Humidity Sensor
 - * Applications from 20% to 80% relative humidity at temperatures between 0°C and 40°C.
 - * High resistance to external influences on the cable due to digital output signal
 - * Accurate to within $\pm 5\%$ relative humidity
 - * Includes mounting hardware
 - * Connects to RJ45 sensor ports only
 - * Maximum CAT5 cable length: 1000 ft.
- ENVIROMUX-STHS Temperature/Humidity Combination Sensor
 - * Applications from 32°F to 122°F (0°C to 50°C) and 20% to 80% relative humidity
 - * High resistance to external influences on the cable due to digital output signal
 - * Accurate to within $\pm 2^\circ\text{F}$ ($\pm 0.1^\circ\text{C}$) and $\pm 5\%$ relative humidity
 - * Includes mounting hardware
 - * Connects to RJ45 sensor ports only
 - * Maximum CAT5 cable length: 1000 ft.

- ENVIROMUX-LDS-x Liquid Detection Sensor
 - * For warning of flooding
 - * Detects any conductive liquid covering at least 5/8" diameter and 1/8" deep
 - * Liquid sensor cable lengths: 3, 7, 10, or 25 feet (ENVIROMUX-LDS-3/7/10/25)
 - * Connects to RJ45 sensor ports only
 - * Maximum CAT5 cable length: 1000 ft.
- ENVIROMUX-VSS Vibration Sensor
 - * For registering movement and shocks
 - * Adjustable sensitivity
 - * Includes mounting hardware
 - * Connect to RJ45 sensor ports only
 - * Screw terminal connector on sensor for connection of CAT5/5e/6 UTP or STP cable
 - * Maximum CAT5 cable length: 1000 ft.
- ENVIROMUX-M-DCS Door Contact Sensor
 - * Monitors access with a magnetic bridge sensor
 - * Screw terminals for 2-wire interface
 - * Wide actuating gap - approximately 1 inch
 - * Normally closed circuit connection
 - * Dimensions WxDxH (in.): 0.5x0.5x2 (Switch), 0.5x0.5x2 (Magnet)
 - * Maximum cable length: 1000 ft.
- ENVIROMUX-GBS Glass Break Detection Sensor
 - * Emits flashing red light when activated
 - * Flash Rate: 80 to 120 per minute at 6VDC; 60 to 80 per minute at 12VDC
 - * Screw terminal connector on sensor
 - * 2-wire interface
 - * Connect to RJ45 or digital input sensor ports
 - * Maximum cable length: 1000 ft.
- ENVIROMUX-EBS Emergency/Panic Button
 - * Sends activation signal when button is pressed
 - * For Normally closed or open circuit connections
 - * Screw terminal connector on sensor
 - * Connect to RJ45 or digital input sensor ports
 - * Dimensions WxDxH (in.): 0.4x0.9x3
 - * Maximum cable length: 1000 ft.
- ENVIROMUX-IMD Infrared Motion Sensor
 - * Registers movement in the area covered
 - * Condition display via LED
 - * Provides immunity from common-mode signals such as the effect of strong hot or cold air currents, variation in ambient temperature, background radiation and acoustic noise
 - * 24 dual-element detection zones for long, mid and short range protections
 - * Surface or corner mounting
 - * Pulse count or single shot triggering
 - * Good RFI protection
 - * Connect to RJ45 or digital input sensor ports
 - * Screw terminal connector on sensor
 - * Maximum cable length 1000 ft.

- ENVIROMUX-IMD-MW Mini Infrared Motion Sensor
 - * Registers movement in the area covered
 - * Condition display via LED
 - * Provides substantial immunity to false alarms caused by environmental disturbances
 - * Pulse count or single shot triggering
 - * Good RFI protection
 - * Screw terminal connector on sensor
 - * Connect to RJ45 or digital input sensor ports
 - * Dimensions WxDxH (in.): 2.2x1.2x2.9 Surface or corner mounting
 - * Maximum cable length 1000 ft.
- ENVIROMUX-IMD-CM Ceiling Mount Motion Sensor
 - * Detects movement across the detection field
 - * 360° detection pattern
 - * 113° conical detection angle from ceiling
 - * 36 foot diameter protection when mounted 12 feet high
 - * Provides substantial immunity to false alarms caused by environmental disturbances
 - * Pulse count or single shot triggering
 - * Connect to RJ45 or digital input sensor ports
 - * Good RFI protection
 - * Screw terminal connector on sensor
 - * Maximum cable length 1000 ft.
- ENVIROMUX-SDS Smoke Detection Sensor
 - * Warning of smoke
 - * Includes mounting hardware
 - * Connect to RJ45 or digital input sensor ports
 - * Supports CAT5/5e/6 UTP or STP cables
 - * Screw terminal connector on sensor
 - * Photoelectric smoke detector
 - * Built-in heat element: rated for 135°F.
 - * Maximum cable length: 1000 ft.
- ENVIROMUX-2W-xx Sensor Cables
 - * 2-wire sensor cable
 - * Used to connect dry contact sensors to the ENVIROMUX
 - * Available lengths (ft.): 3/6/10/25/50/100

Available Accessories (sold separately)

- ENVIROMUX-ACK Digital Keypad
 - * Two relay outputs controlled by two groups of independent user codes
 - * Output 1: 5 Amp relay for door strike
 - * Output 2: 1 Amp relay for other control applications
 - * Normally closed and normally open dry contacts for both output relays
 - * LED indicators for operation status and system status
 - * Terminal block for all external connections
 - * Single lock or inter-lock operation
 - * Standard single gang mounting box
 - * Built-in tamper switch
 - * Operate with fail-safe or fail-secure locking device
 - * Door open announcer
 - * Non-volatile memory in case of power failure

- ENVIROMUX-RKS Key Station
 - *Remote key station designed for security system ON-OFF control applications
 - *Built with universal connection terminals; can be used freely with most security systems
 - *Provides momentary contact with spring return
 - *Standard single gang mounting box
 - *Built-in tamper switch
 - *Built-in connection terminals
 - *For security system and door strike applications
 - *Dimensions WxDxH (in.): 1.7x 2.9x4.6

- ENVIROMUX-EDR-SF \ ENVIROMUX-EDR-SCR Electric Strike
 - * Combine with ENVIROMUX-ACK, access control digital keypad, to convert a standard cylindrical lock set to an electronic access control locking system with high security and user convenience without a key
 - * Fail-Safe Electric Strike (ENVIROMUX-EDR-SF)
 - * The door is locked with power ON, and unlocked with power OFF
 - * For Fire/Emergency door or Escape door installations
 - * Fail-Secure Electric Strike (ENVIROMUX-EDR-SCR)
 - * The door is locked with power OFF, and unlocked with power ON
 - * For Entrance door installation

- ENVIROMUX-PWR-RLY-15A\20A - 15A/20A relay switched 120VAC outlet
 - * Using Class 2 wiring the user can remotely control switched power to any 120VAC device (15A/20A max.)
 - * Built-in connection terminals

NOTE: The Electric Strike should be connected to DIGITAL IN terminal 8 (see page 9).

See our webpage for the latest sensors available; www.networktechinc.com/enviro-sensor.html

Contact your nearest NTI distributor or NTI directly for all of your cable needs at 800-RGB-TECH (800-742-8324) in US & Canada or 330-562-7070 (Worldwide) or at our website at <http://www.networktechinc.com> and we will be happy to be of assistance.

Shielded CAT 5,5e, or 6 cable must be used to connect to the "ETHERNET", expansion ports ("IN" and "OUT") and "RJ45 SENSORS" ports in order to meet electromagnetic emissions and immunity requirements.

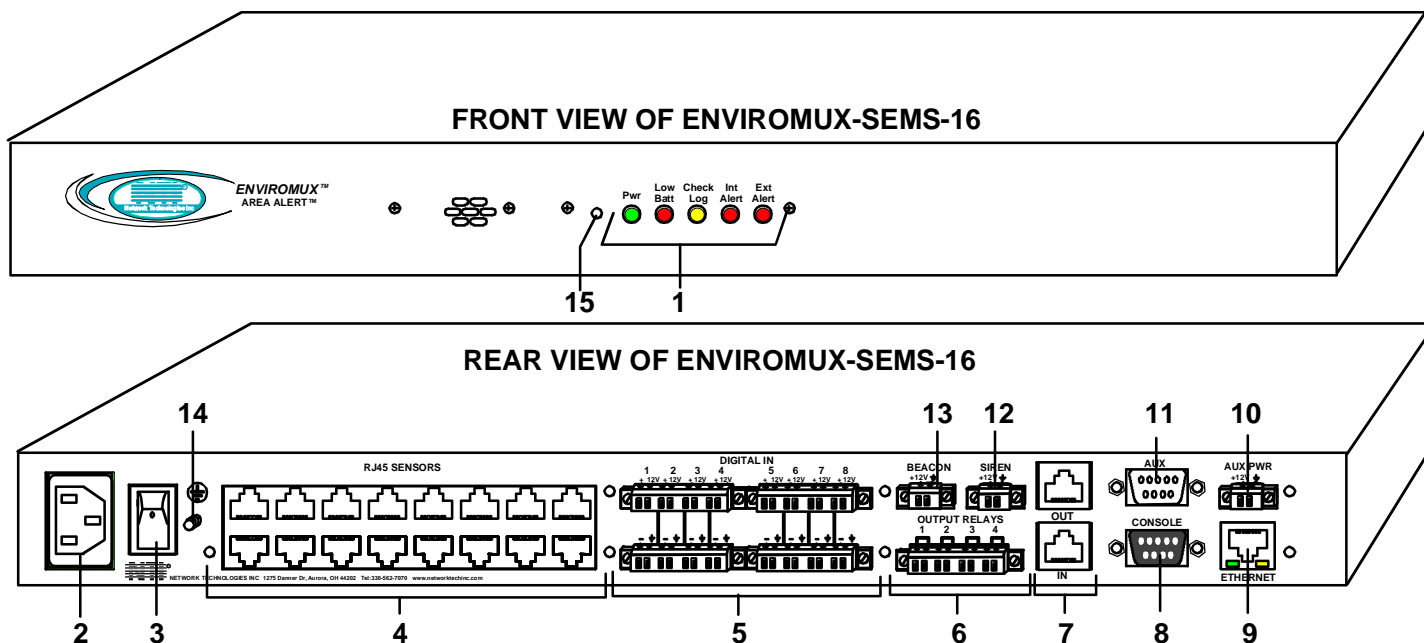
SUPPORTED WEB BROWSERS

Most modern web browsers should be supported. The following browsers have been tested:

- Microsoft Internet Explorer 6.0 or higher
- Netscape 7.2 or higher
- Mozilla FireFox 1.5 or higher
- Opera 9.0

Note: In order to view all of the graphics, the browsers JavaScript and Java must be enabled.

FEATURES AND FUNCTIONS



1. LEDs- Pwr- indicates when power to ENVIROMUX is ON (solid ON) and when power failure has occurred (battery power is ON- LED is blinking once per second)
 Low Batt- indicates that the backup battery is running low on power, disconnected, or in failure
 Check Log- illuminates when a new entry that is not an alert is added to the log
 Int Alert- illuminates when an internal sensor generates an alert
 Ext Alert- illuminates when an external sensor generates an alert

See LED Status Chart (pg. 59) for more on LED indicators.

2. IEC Connector- for connecting the IEC power cable (see also “Dual Power Option” on page 13)
3. Power Switch- used to turn the power to the ENVIROMUX ON/OFF
4. RJ45 Sensors- RJ45 female connectors- for attachment of various sensors
5. Digital IN- connection block for wired sensors (2-to-4 wire)
6. Output Relays- connection block for devices to be controlled in the event of alerts
7. In and Out- ports for expansion to up to 4 connected systems
8. Console-DB9 female connector- DCE port for RS232 serial connection of a terminal to control the system
9. Ethernet- RJ45 female connector- for connection to a Local Area Network (LAN) for remote configuration, monitoring, and control
10. Aux Pwr- terminal block for powering a GSM modem with 12VDC power at 150mA max. (fuse protected)
11. Aux- DB9 male connector- DTE port for serial connection of a GSM modem for cell phone monitoring of alerts
12. Siren- terminal block for two-wire connections of audible alarm (ENVIROMUX-SRN-M Siren on page 10)
13. Beacon- terminal block for two-wire connection of visual alarm (ENVIROMUX-BCN-R Beacon on page 10)
14. Ground post- for external bonding connection
15. Reset Button- for rebooting the firmware for the ENVIROMUX-SEMS (see page 59 for details)

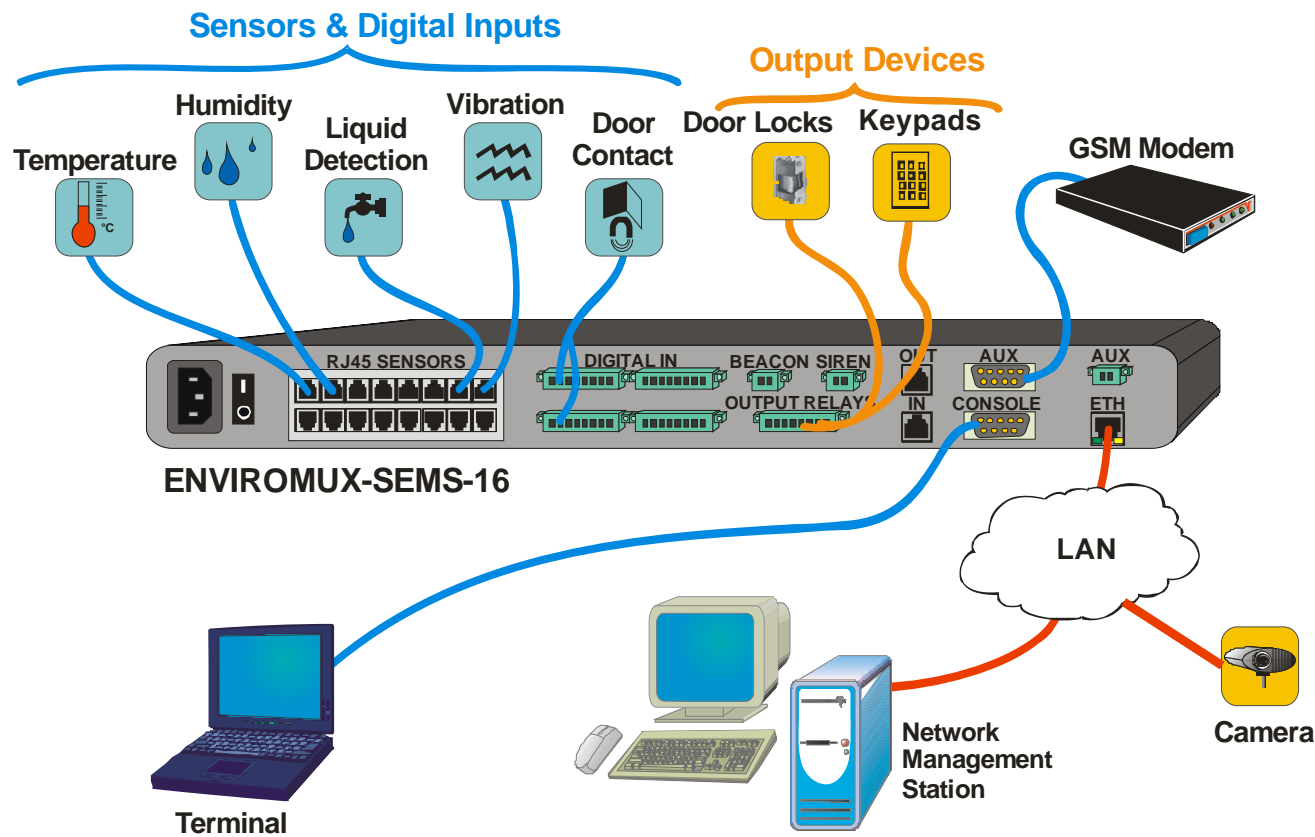


Figure 1- Typical Application

INSTALLATION

Rack Mounting Instructions

The ENVIROMUX was designed to be mounted to a rack. It includes a mounting flange to make attachment easy.

1. Install 4 captive nuts to the rack in locations that line up with the holes (or slots) in the mounting flange on the NTI switch.
2. Secure the ENVIROMUX to the rack using four 10-32 screws and cagenuts (provided). Be sure to tighten all mounting screws securely.

Note: Do not block power supply vents in the ENVIROMUX case. Be sure to enable adequate airflow in front of and behind the ENVIROMUX.

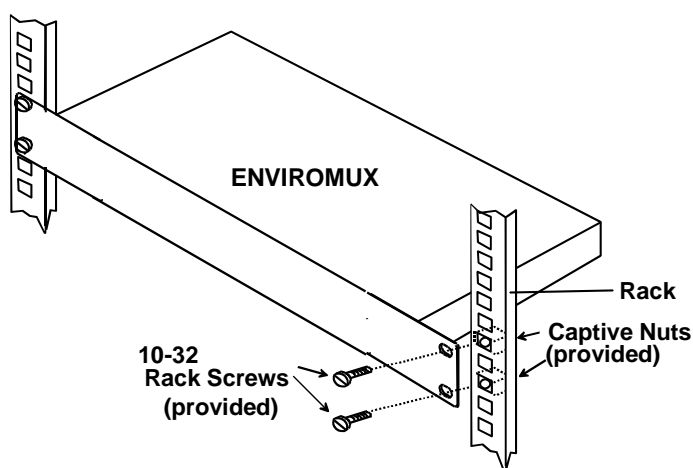


Figure 2- Mount ENVIROMUX to a rack

3. Attach all cables securely to the ENVIROMUX and where necessary supply adequate means of strain relief for cables.

Sensor Attachment

Note: It is very important to locate the temperature and/or humidity sensors away from ventilation sources and fans.

1. Connect each external sensor having an RJ45 male connector on it (ENVIROMUX-STTS, ENVIROMUX-SHS, ENVIROMUX-STHS, ENVIROMUX-LDS) to one of the female connectors labeled "RJ45 Sensors" on the ENVIROMUX. Male connectors should snap into place. See page 68 for wiring specification and pinout.

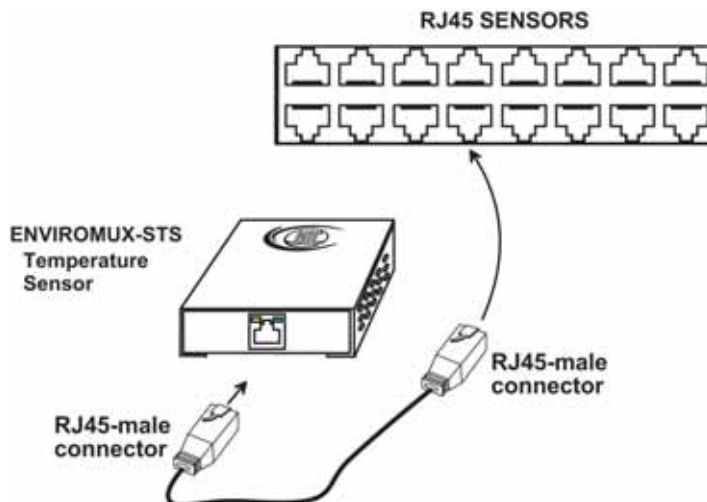


Figure 3- Sensors connected by cables with RJ45 connectors

Note: If the ENVIROMUX-LDS Liquid Detection sensor is installed, the twisted orange sensing cable should be placed flat on the surface (usually the floor) where liquid detection is desired. If tape is required to hold the sensor in place, be sure to only apply tape to the ends, exposing as much of the sensor as possible. At least 5/8" of the sensor must be exposed for it to function. (See Fig. 4)

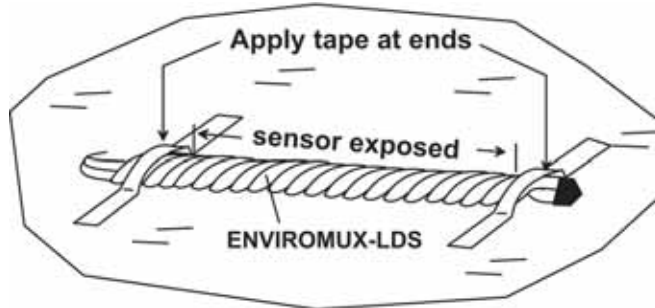


Figure 4- ENVIROMUX-LDS sensor mounting

2. Some sensors do not have RJ45 connectors on them and instead have terminal blocks. These can either be connected to the "DIGITAL IN" connectors or they can be terminated and plugged into the remaining RJ45 connectors (see Fig. 5). (The illustration uses CAT5 patch cable to make cable connection easy.) Examples of these sensors include ENVIROMUX-IMD, ENVIROMUX-IMD-MW, ENVIROMUX-EMD-CM, ENVIROMUX-VSS, ENVIROMUX-SDS, and ENVIROMUX-GBS. (For more on these and other sensors, see pages 2 and 3.)

Note: For sensors requiring 5VDC power source, substitute the wire connected to pin 4 (see page 68) instead of pin 7.

Schematic for wiring Contact Sensor to RJ45 Socket

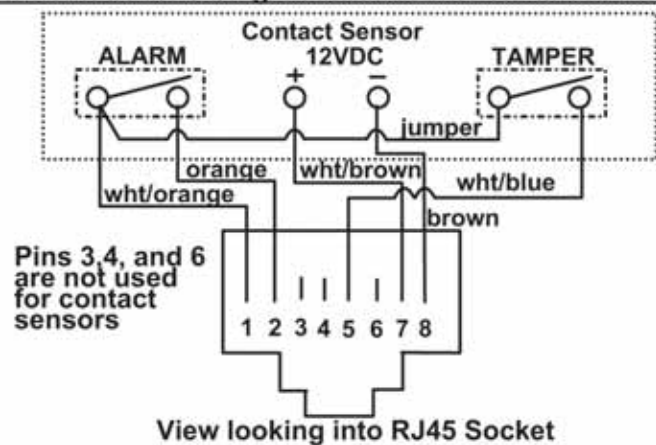
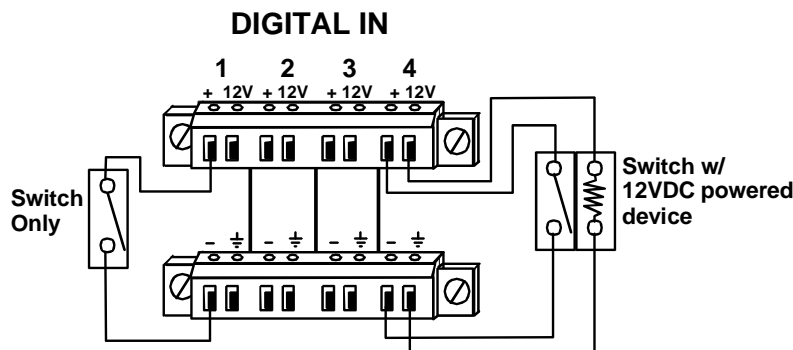


Figure 5- Contact sensor wired to RJ45 socket

3. To connect contact sensors without using RJ45 connectors, terminal blocks have been provided labeled "DIGITAL IN". Two wire switch-only type sensors can be connected to the plus (+) and minus (-) terminals of each or 4 sets of terminals. If the sensors require a 12V power source to operate, additional 12V and ground terminals have been provided for each set of terminals. Connect each two-wire or four-wire contact sensor using 16-26 AWG wire.

- Devices connected to DIGITAL IN terminals 1-7 must be rated at **50mA** or less.
- Devices connected to DIGITAL IN terminal 8 must be rated at **650mA** or less.

FYI: The terminal block is removable for easy sensor wire attachment if needed.



NOTE: If used, the ENVIROMUX-EDR-SF/ENVIROMUX-EDR-SCR Electric Strike should be connected to DIGITAL IN terminal 8 for power.

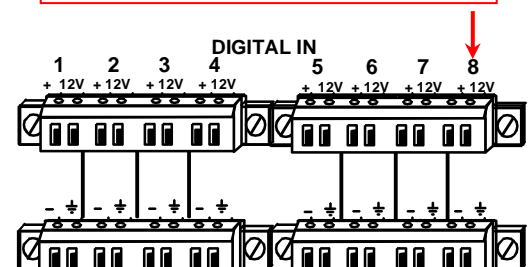


Figure 6- DIGITAL IN Terminal Connections

4. Terminals have been provided for connection of the ENVIROMUX-BCN-R Beacon and ENVIROMUX-SRN-M Siren to use for visual alerts and audible alerts when configured. Devices such as this can be installed in locations best suited to get attention. All devices must be installed using 16-26 AWG wire.

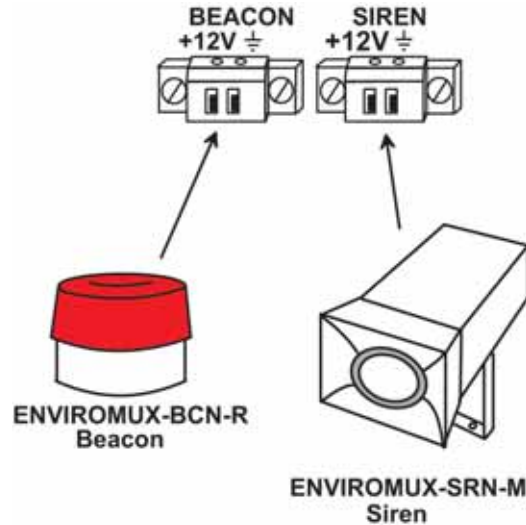


Figure 7- Connect visual and audible external indicators

Connect Output Devices

For connection of additional output devices to be controlled by the ENVIROMUX, terminals labeled "Output Relays" have been provided. The 4 pairs of contacts will work as switches to either close or open (switch ON or OFF) when used. The switch position is configured on the Sensor Configuration page (page 23).



WARNING

OUTPUT RELAY dry contact ratings must not be exceeded. Dry contact rating: DC 30V, 1A; AC 100V, 500mA. The OUTPUT RELAY contacts are not to be connected directly to AC mains wiring.

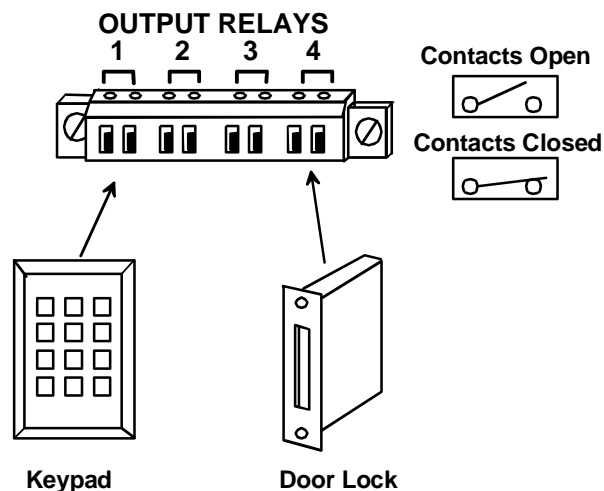


Figure 8- Install additional devices to output terminals

Terminal Connection for RS232

To make a direct serial connection to the ENVIROMUX from a terminal with HyperTerminal via RS232, a 9DB female DCE port labeled "Console" is provided. Connect a male-to-female 9DB cable from a serial port on the terminal to the 9DB female connector on the ENVIROMUX. The cable should be wired straight through (pin 1 to pin 1, pin 2 to pin 2, etc.)

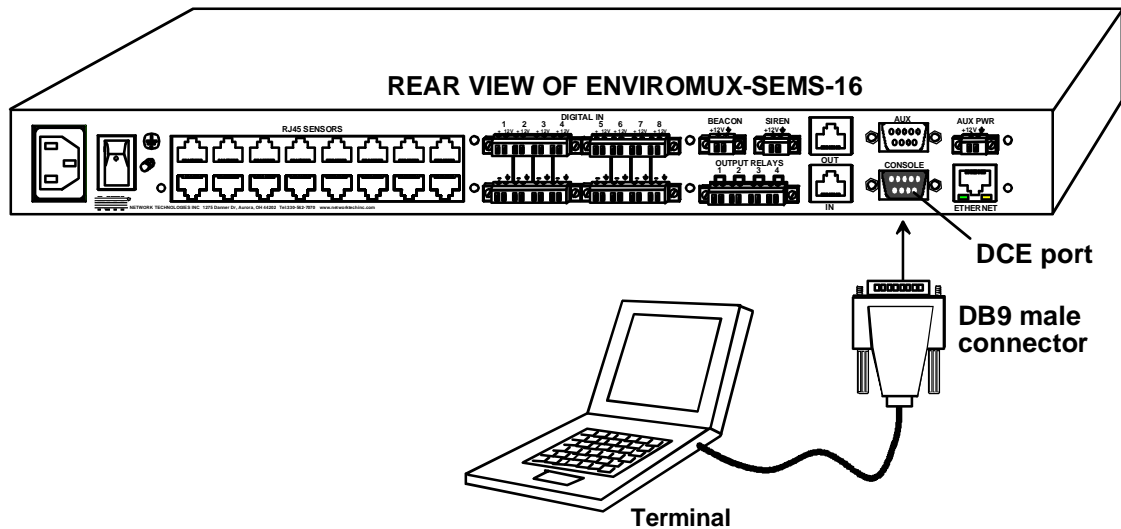


Figure 9- Connect a terminal for direct RS232 serial communication

Ethernet Connection for Remote User Control

To make a remote connection, over the Ethernet, from anywhere on the local area network, connect a CAT5/5e/6 Ethernet cable with RJ45 male connectors on the ends, wired straight through (pin 1 to pin 1, pin 2 to pin 2, etc.).

Note: To make a direct connection from a computer to the ENVIROMUX through the ETHERNET port, a crossover cable is required. See page 67 or "PC-To-ENVIROMUX Crossover Cable".

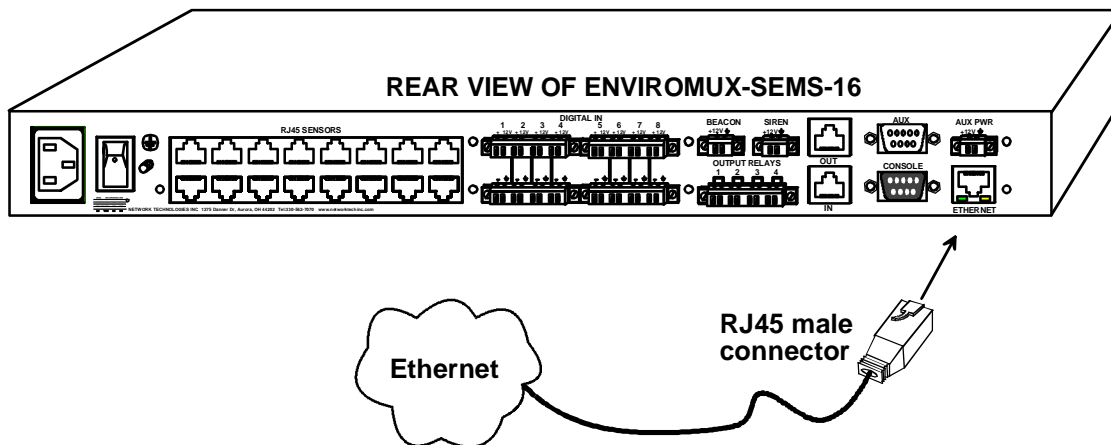


Figure 10- Connect ENVIROMUX to the Ethernet

GSM Modem Connection

If alert notifications via SMS to a cell phone are desired, a GSM modem can be connected to the male 9DB DTE port labeled "AUX". Using this serial connection, a user can receive SMS alert messages directly on their cell phone. The external GSM modem can be either self-powered or connected to 12V from the ENVIROMUX using the "AUX PWR" terminal. The ENVIROMUX is a DCE serial device.

Note: The GSM modem must be connected to ENVIROMUX and powered ON before powering ON the ENVIROMUX.

Note: The "AUX PWR" terminal is backed up by the battery inside ENVIROMUX.

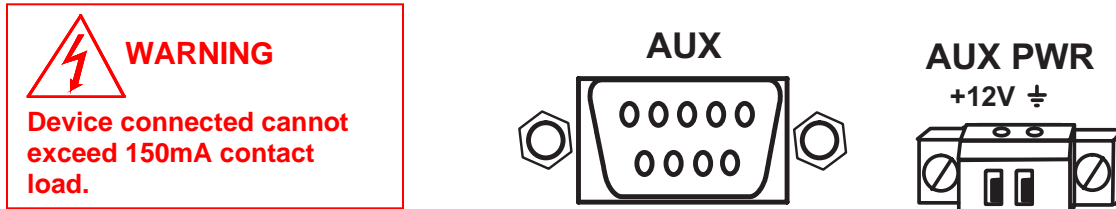


Figure 11- Aux port and power for GSM modem connection

Cascaded Installation via Direct Connection

For a cascaded installation using the Direct Connect method (see page 16), enabling the monitoring of all sensors from up to four ENVIROMUX-SEMS-16 systems, connect a CAT5/5e/6 patch cable (maximum 25 feet long) with RJ45 male connectors on each end (wired straight thru, pin 1 to pin 1, pin 2 to pin 2, etc.) between the "In" and "Out" ports as shown in the image below. With this properly connected the user can monitor the sensors of all systems from either a single connected terminal (page 11) or through a single Web Interface (page 18).

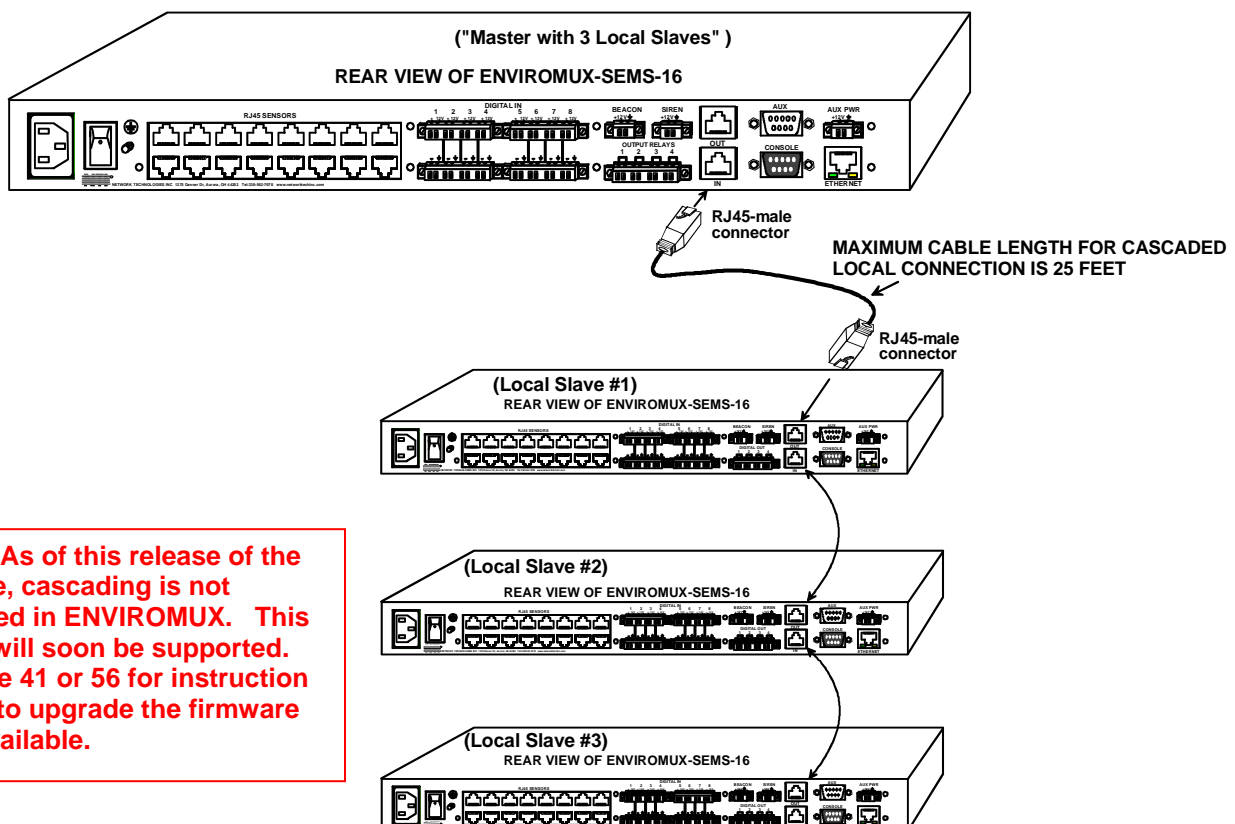


Figure 12- Cascade up to 4 systems for centralized sensor monitoring

Power cord Connection

Connect the power cord supplied to the IEC connector on the rear of ENVIROMUX. Plug the other end into AC mains and use the switch to power ON ENVIROMUX.

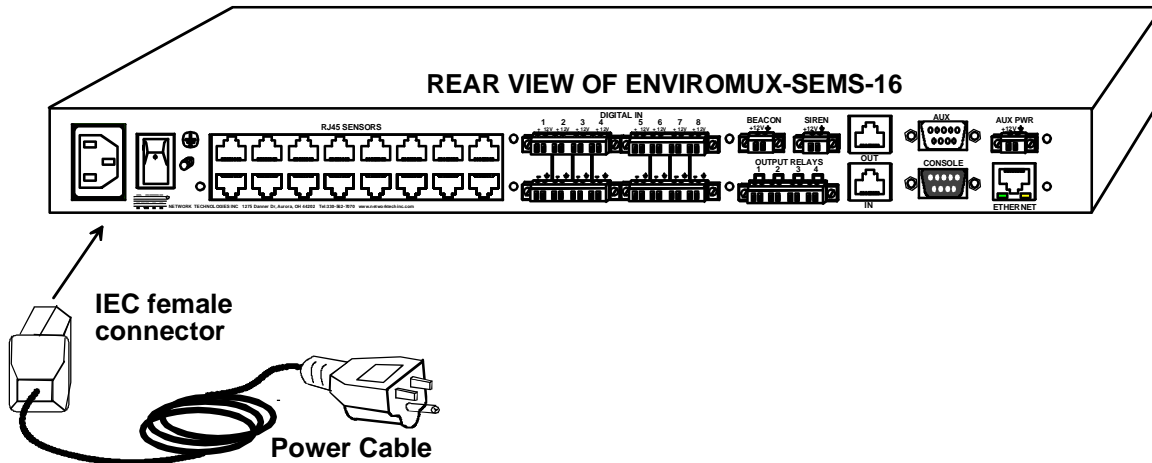


Figure 13- Connect the power cord

Dual Power Option

The ENVIROMUX-SEMS-16-DP has two IEC connectors on the rear, for connection to two separate power sources. If the power source connected to “PWR 1” fails, the ENVIROMUX will automatically and without interruption switch over to the power source connected to “PWR 2” before switching to the battery backup (page 60).

Note: If only one power source is used, it should be connected to “PWR 1”.

Note: The power ON/OFF switch is located on the front panel of ENVIROMUX when two IEC connectors are present.

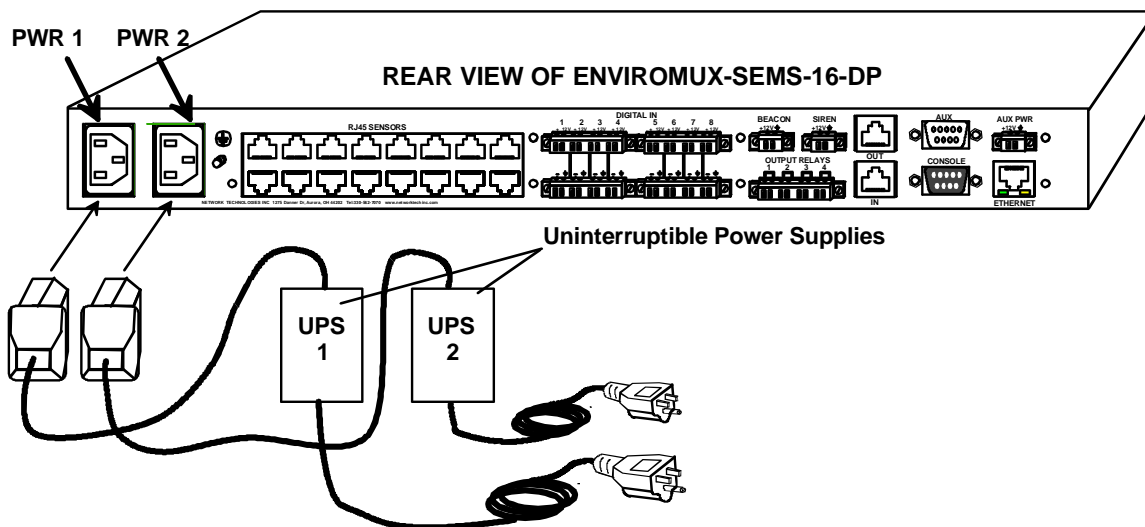


Figure 14- Power connections for ENVIROMUX with Dual Power Option

OVERVIEW - USE AND OPERATION

The ENVIROMUX is controlled via RS232 or Ethernet using a terminal emulator, web browser, or SNMP monitor. The user interfaces are for viewing and configuring sensor data and system settings. However, full configuration of the system can be done only through the Web browser due to graphics limitations in the other interfaces.

The web interface allows for the configuration of the thresholds for all attached sensors, their alert methods, and the formats of the alerts. In addition, network information (IP address, subnet mask, default gateway, DNS, etc.), user administrative settings, and log settings can also be configured. All settings are saved in memory when applied. A user may also restore the unit back to its default settings at any time via the web interface (see page 56).

Individual sensor status pages are available for each connected sensor. A sensor summary page allows the user to view the connected sensors' current values, threshold settings and alert statuses. Also, the user can view recorded sensor readings that have been stored in the system data log.

Sensors

The ENVIROMUX provides 16 RJ45 sensor input jacks and 8 screw terminals ports. Available sensor configurations include Temperature, Humidity, or Temperature+Humidity, Liquid, Vibration, Smoke, Motion Sensor, and Glassbreak detector. See page 2 for more on available sensors.

The temperature/humidity sensors have been given factory default settings and thresholds that can be changed (see page 20). Sensor readings can be reported continuously, only when readings change, or at a regular rate (for instance, a temperature reading could be updated once each hour).

Sensors connected to the terminals labeled "Digital In" must be manually configured, and can be any sensor of contact-closure / open-collector type that operate on 12VDC and 50mA, with a maximum load resistance of 10k Ω or less. (See page 24 for more info.)

IP Assignment

An IP address can be assigned to the ENVIROMUX through any of three methods:

- Using the NTI Device Discovery Tool (page 17)
- Through the web interface on the Network page (page 32)
- Using the RS232 interface (page 49)

Initially, IP configuration will be the easiest to change using the NTI Device Discovery Tool (found on the CD), which will search for NTI devices on the user's network and allow IP assignment to them through its web interface. Other settings for subnet mask and default gateway may also be configured (see page 17). These settings must be configured properly in order to access the ENVIROMUX web interface.

User Management

The ENVIROMUX supports up to 16 user accounts plus the root account (page 34). Each user account is protected by local password authentication. Each user may be assigned "User" or "Administrative" privileges. Users accessing the ENVIROMUX will be granted access to only the monitoring functions, and will be able to view the log. An account with "Administrative" privileges has all of the privileges necessary to view and configure network settings, add/edit/delete other user accounts, configure sensors, etc..

Alerts

A high and low threshold limit can be set for each temperature or humidity sensor within the operating range of the sensor. Each open collector/contact-closure sensor can be set as normally-open or normally-closed. When a sensor takes a reading that is outside a threshold or a contact-closure sensor is not in its normal condition, an alert notification can be generated. The user can specify how often alert notifications are provided. Also, there is an adjustable alert delay time involved with alert notifications. This means if a sensor's readings are moving in and out of the threshold boundaries within a configurable period of time, additional alert notifications will not be sent. Alerts may be sent if the condition of the sensor returns to normal or back within its threshold boundaries. Alert notifications (page 25 and sample on page 43) will be provided through any or all of five main methods:

- visible notification via the user interfaces (red LED on front panel, beacon, alert on webpage)
- emails
- SNMP Traps
- SMS Messages
- Syslog Messages

Data and Event Logging

The ENVIROMUX can log sensor readings, sensor alerts, alert handling, sensor connections/removals, and user logins/logouts. The logs can be viewed at any time through the web interface (page 43). Additionally, as entries are generated, they can be emailed or sent as SNMP traps. Entries can be deleted from the logs via the web interface. The maximum size of each log is 1000 entries, listed in chronological order. Each log's behavior upon reaching this maximum size can be configured, allowing the log to either wrap (overwrite oldest entries), stop logging, or clear and start over. The entire log can be downloaded as a plain text file from the web interface at any time. Log entries can be removed individually, in groups, or all at once.

Email

The ENVIROMUX can access an outgoing SMTP server to send email. Outgoing mail may contain pre-formatted alert notifications or data log messages (samples on page 43 and 44). The user can configure what conditions cause emails to be sent. The ENVIROMUX's email address, as well as SMTP server information and the email addresses to which emails are sent, can be configured on the Network Setup page through the web interface (page 32). Up to 17 outgoing email addresses (112 characters maximum including commas) may be configured (corresponding to the 16 user and 1 root email addresses).

Syslog

The ENVIROMUX can send alerts as SYSLOG messages when a sensor enters/leaves alert mode, and for all log events. The destination for SYSLOG can be configured in each user profile (page 36). For a SYSLOG message to be sent, put a checkmark in the "Syslog" box. Enter an IP address in the "Email address" box and click Apply.

SNMP

The ENVIROMUX can send alerts as SNMP traps when a sensor enters/leaves alert mode, and for all log events. Using an SNMP MIB browser, a user can monitor all sensor statuses and system IP settings, as well as configure sensor thresholds, sensor names, and the system name. Click on the checkbox for SNMP under contacts (page 36) for each user that should receive SNMP messages. The SNMP agent supports both SNMPv1 and SNMPv2.

Note: The SNMP MIB file (enviromux-mini.mib), for use with an SNMP MIB browser, can be found on the manual CD. Click on the link to open the file, then save the file to your hard drive to use with the SNMP MIB browser.

External GSM Modem

An external GSM modem can be connected to allow the system to send alert notifications via SMS messages. When a sensor crosses a threshold, an alert notification can be formatted to SMS message (see page 36) and the modem could transmit the message to a pre-specified cellular number. The external modem can be supplied from an external power supply or from the provided 12V.

Power-on/Reset Operation

On power-up, after going through its boot sequence, the ENVIROMUX will launch the monitoring application, load any stored configuration values, and immediately identify and begin taking readings from any connected sensors. Alerts will be reported using the configured alert methods, and data will be logged using the stored preferences. A user can log in at any time after the system has launched the monitoring application (approximately 5 seconds after power is applied) to view and configure properties of the system and its sensors.

FYI: The boot sequence can also be initiated manually using the Reset button. See page 59 for details.

Out-of-Box Operation

The operation of the unit directly out of the box is nearly identical to the Power-on/Reset operation. However, information about the unit will only be able to be monitored and controlled through the RS232 port until valid network settings are assigned to the device (see page 32). The RS232 provides only limited configuration options, pertaining mostly to Ethernet settings.

Alert notifications will only be able to be viewed through the front panel until network settings are configured. Email and SNMP alert notifications must be configured within the web interface (page 31) before these methods can be used. The network settings must be compatible with the physical network to which the ENVIROMUX is attached. Once these configurations are made, they will be saved in the unit, even if the ENVIROMUX is powered-OFF.

Expandability

Multiple ENVIROMUX units may be used together on one system, so as to increase the number of sensors the user can have connected. Despite having multiple units, the user does not have to access the webpage of each ENVIROMUX individually. Up to 4 units can be cascaded such that all of the data from each of the units can be displayed on a single format.

There are 2 ways to cascade ENVIROMUX:

1. **Direct Connect**- The units can be connected together through an expansion cable that can be as long as 25ft (depending on how many units are cascaded). See page 12 for how to install with an expansion cable.
2. **Ethernet Connect**- The units can be connected via the Ethernet to expand the number of sensors. All units must be on the same LAN.

A master unit will poll each of the slave units and present all of the data in a combined group from either of the user interfaces. A maximum of 4 units can be cascaded.

Note: For ENVIROMUX units used as slaves in a cascaded system, the Siren, and Beacon terminals are not cascaded and are therefore not useable on slave units. Only the additional sensor inputs and the output relays will be seen by the master unit.

NOTE: As of this release of the firmware, cascading is not supported in ENVIROMUX. This feature will soon be supported. See page 41 or 56 for instruction on how to upgrade the firmware when available.

DEVICE DISCOVERY TOOL

In order to easily locate the ENVIROMUX on a network, the NTI Device Discovery Tool may be used. A link to the Discovery Tool is provided on the web page that appears when you insert the instruction manual CD provided into your CD ROM drive. Click on the link or browse the CD and click on the file *discover.html*. This will open your browser and display the Device Discovery Tool page.

Note: The Device Discovery Tool requires the Java Runtime Environment to operate. A link to the web page from which it can be downloaded and installed is provided on the CD.

Note: The computer using the Device Discovery Tool and the ENVIROMUX must be connected to the same physical network in order for the Device Discovery Tool to work.

Network Technologies Inc Device Discovery Tool

- **START**
 - When you load this page, the NTI Device Discovery Applet should load. Accept the Certificate to allow this applet access to your network. Press the button entitled **Detect NTI Devices** to start the discovery process. After a short time, the tool will display all NTI devices on your network, along with their network settings.

Note: Do not close this page while the NTI Discovery Tool is running. Close the NTI Device Discovery Application first, **then** this webpage.

- **How To Use the Discovery Tool**
 - **To Change A Device's Settings**, within the row of the device whose setting you wish to change, type in a new setting and press the **Enter** key or the **Submit** button on that row. You can also press the **Submit All** button to submit all changes at once.
 - **To Refresh the list of devices**, press the **Refresh** button.
 - **To Blink the LEDs of the unit**, press the **Blink LED** button (This feature not supported on all products). The **Blink LED** button will change to a **Blinking...** button. The LEDs of the unit will blink until the **Blinking...** button is pressed, or the NTI Device Discovery Application is closed. The LEDs will automatically cease blinking after 2 hours.
 - **To Stop the LEDs of the unit blinking**, press the **Blinking...** button. The **Blinking...** button will change to a **Blink LED** button.

Detect NTI Devices

0%

Figure 15- Device Discovery Tool page

Use the Device Discovery Tool to display all NTI ENVIROMUX units on the network, along with their network settings. Follow the instructions on the Device Discovery Tool page to use the tool and to change the device settings if so desired.

Device	MAC Address	IP Address	Mask	Gateway		
ENVIROMUX	00:40:9D:24:07:70	65.243.248.18	255.255.255.128	65.243.248.1	Submit	Blink LED
		Submit All	Refresh	Close		

USE AND OPERATION VIA WEB INTERFACE

A user may monitor and configure the settings of any device connected to the ENVIROMUX using the Web Interface via any web browser (see page 2 for supported web browsers). To enable the Web Interface, connect the ENVIROMUX to the Ethernet (page 11). Use the Device Discovery Tool (page 17) to setup the network settings. Then, to access the web interface controls, the user must log in.

Note: In order to view all of the graphics in the Web Interface, the browser's JavaScript and Java must be enabled.

Log In and Enter Password

To access the web interface, type the current IP address into the address bar of the web browser. (The default IP address is shown below):

http://192.168.1.21

A log in prompt requiring a username and password will appear:

Username = root

Password = admin

(lower case letters only)

Note: usernames and passwords are case sensitive

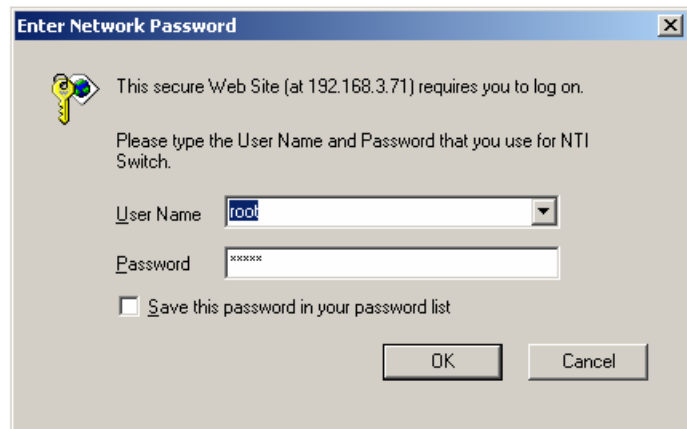


Figure 16- Login prompt to access web interface

With a successful log in, a screen similar to the following will appear:

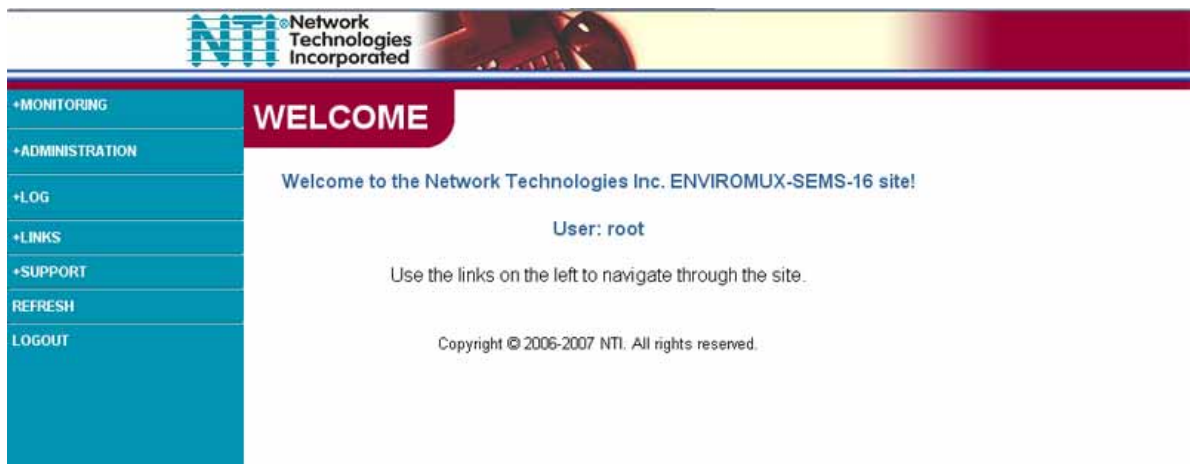


Figure 17- Initial "Welcome" Page

From the initial Welcome page, the user can use the menu to the left to manage all the functions of the ENVIROMUX.

Function	Description
MONITORING	Monitor all the sensor and data input received by the ENVIROMUX (below)
ADMINISTRATION	Configure all network and multi-user access settings (pages 27-33)
LOG	View and configure the Event and Data Logs (page 38)
LINKS	Provides a link to servers or website favorites for quick navigation (page 40)
LOGOUT	Log the user out of the ENVIROMUX web interface
SUPPORT	Links for downloading a manual, the MIB file, or firmware upgrades
REFRESH	Refresh the image on the display to show the most current information available

Monitoring

Under Monitoring, there are links to view the sensors, webcams, and IP address data being monitored by ENVIROMUX.

Link	Description
Summary	Lists all sensors , including their type, description, value, and status (below)
Internal Sensors	Provides a link to view the status of specific Internal Sensors (page 22)
External Sensors	Provides a link to view the status of specific External Sensors (page 23)
Digital Inputs	Provides a link to view the status of each Digital Input (page 27)
Output Relays	Provides a link to view the status of each Output Relay (page 28)
IP Devices	Provides a link to view the status of each IP device defined- indicating an active connection or not (page 29)
Webcams	Displays an image from up to 8 webcams with links to connect to each (page 30)

Summary Page

The Summary Page breaks the data reported into 6 categories:

Category	Description
Power supplies	Indicates the status of the power supply(s)
Internal Sensors	there are three inside the ENVIROMUX
External Sensors	sensors that connect to the RJ45 connectors
Digital Inputs	sensors that connect to the terminals "Digital In"
Outputs	Relays that open or close depending on alert status
IP Devices	IP Addresses that can be monitored by ENVIROMUX



SUMMARY			
Wednesday, 2007-06-20 15:36:42			
Type	Description	Value	Status
POWER SUPPLIES			
Power	Main Power Supply	OK	Normal
INTERNAL SENSORS			
Temperature	Internal Temperature	26.6°C	Normal
Humidity	Internal Humidity	Out of range	Alarm
Power	Battery	13.8V	Normal
EXTERNAL SENSORS			
Smoke Detector	IPMI Server Rack - (Flat SC5)	Open	Normal
Temperature Combo	Undefined #9	76.6°F	Normal
Humidity Combo	Undefined #9	Out of range	Alarm
Water	Eng Server Rack - (SC5-180)	Open	Normal
Water	Outdoor Porch (SC5-350)	Open	Normal
DIGITAL INPUTS			
Digital Input	IPMI Rack - Front door	Open	Alarm
Digital Input	IPMI Rack - Back door	Open	Alarm
OUTPUT RELAYS			
Output Relay	LED 1	Closed	
Output Relay	LED 2	Closed	
Output Relay	LED 3	Open	
Output Relay	LED 4	Open	
IP DEVICES			

To see the settings of each sensor, click on the link in the description column for the desired sensor. Click on the browser's Back button to return to the summary.

Double-function sensor (see page 22)

Figure 18- Summary Page

Power Supplies

The status of the power supply can be seen, and when an ENVIROMUX-SEMS-16-DP is present, both power supplies will be shown. Click on the power supply to open a web page that displays the type of item sensed, the status of the power supply, and the time and date of the most recent alert sent regarding the power supply.



Figure 19- Power Supply status page

If the power supply is in alert status, the user has the option to either **acknowledge** the alert or **dismiss** it. If the user acknowledges the alert, no additional alert messages will be sent during that alert status cycle. If the user dismisses the alert, another alert message will be sent once the “notify again after” time designated on the configuration page (below) elapses.

A **Configure** button at the bottom of the page allows the user to configure parameters of the power supply.

Power Supply Alert Configuration

Type

Description: Each power supply can be given a unique description (see Fig. 20). Descriptions can be from 1-80 characters in length and include most characters. They cannot contain a backslash (\) or quotation mark ("). Descriptions will be used in e-mail alerts in the DESCRIPTION field.

Within this section the alerts regarding this sensor can be disabled.

Note: *If alerts for a power supply are disabled, the associated output action (see "Outputs"- page 25) will still take place. There just won't be any alert notifications that this is occurring. For example, this might be used to turn ON a device, such as a beacon, when the power supply loses power, and OFF again when power is restored. An alert message may not be desired under these circumstances.*

Note: *if the user wants to disable alerts for a power supply after the power supply is already in alert status, the user must either acknowledge or dismiss the alert first.*

Group: This is the group of sensors the power supply sensor will belong to. Users that subscribe to alerts from this group will receive alerts from the power supply sensor. Each sensor can be configured to send alerts. Up to 16 sensor groups can be defined. Each user can receive alerts from any or all of the sensor groups.

Note: *In the event of a line power failure, the battery backup (page 60) will power the ENVIROMUX for up to 1 hour.*

Power Supply Alerts Configuration

Type: Power Supply Monitor

Description: Main Power Supply Group: Group #1

☐ Disable alerts for this sensor

Alert Timing

☒ Notify when return to normal Notify again after: 30 Min

Alert Notifications

☒ Enable E-mail Alerts ☐ Enable SNMP Traps ☐ Enable SMS Alerts

☐ Enable Syslog Alerts ☐ Enable Siren Alerts ☐ Enable Alarm Beacon

Outputs

Associate output 2 On alert close the output contact

On return to normal open the output contact

Apply Status

Figure 20- Power Supply alerts configuration

Alert Timing

Notify when return to normal: The user can also be notified when the power supply has returned to the normal operation by selecting the "**Notify when return to normal**" box.

Notify Again: Specifies the amount of time before an alert message is repeated. The repeated alert can be set to occur from 1-999 seconds, minutes, or hours.

Alert Notifications

The alert can be configured to notify one or more users via email, SNMP traps (V1), Syslog messages, or SMS alerts. It can also activate an audible siren, or an alarm beacon. Alerts are also indicated on the "Int Alert" or "Ext Alert" LEDs on the front of the ENVIROMUX and in the WEB interface.

Outputs

Each power supply can be associated with one of the connections labeled "Output Relays" (see page 28), and that connection can be set to open or close the contacts of the relay either on alert, or when returning to normal. The tamper can also block the output command generated by the alert. In this way other devices can be controlled by power supply alerts. Examples of this can be found in the wiring examples on pages 68 and 69.

Internal Sensors

ENVIROMUX has three on-board sensors, which are permanently present:

- one temperature sensor
- one humidity sensor
- one power (battery) sensor

These internal sensors are always shown in the left menu of the web page and they cannot be removed.

External Sensors

The External Sensors are those that connect through RJ45 connectors. There are two types of external sensors supported by the RJ45 connectors: **RS485 Sensors** and **Contact Sensors**.

RS485 Sensors

The following types of RS485 sensors are supported:

- Temperature Sensor (ENVIROMUX-STs)
- Humidity Sensor (ENVIROMUX-SHS)
- Combined Temperature + Humidity Sensors (ENVIROMUX-STHS)

RS485 Sensor Management

The RS485 sensors are detected and identified by type automatically when they are connected to the RJ45 connector. The newly detected sensor will appear in the left menu of the web page under **Monitoring->External Sensors**. A web page will be created for the sensor and the default name issued to the sensor by ENVIROMUX will be "**Undefined #n**", where n is the number of RJ45 connector from 1 to 16.

If a **double-function sensor** is detected (ENVIROMUX-STHS), it will be displayed as two sensors, each one with a single function (as shown in Fig. 18). For example a Temperature/Humidity sensor will appear as separate sensors (Temperature sensor and a Humidity sensor) both with the same number connector. The default name of both sensors will be **Undefined #n**, where n is the connector. A double-function sensor will be listed as a "Combo" type (i.e. Temperature Combo).

The user can see the sensor measurements by clicking on the sensor's name on the left menu or in the Summary page. A web page will be displayed for the selected sensor, showing the type of sensor, the name, value of the reading (if it is an analog value it will be also displayed graphically), the threshold settings (in red) and the current reading (in green) of a selected sensor. It also shows the time, date, and measurement taken of the most recent alert and statistics (last alert, lowest value, highest value). Lowest and highest values are indicated only for RS485 sensors.

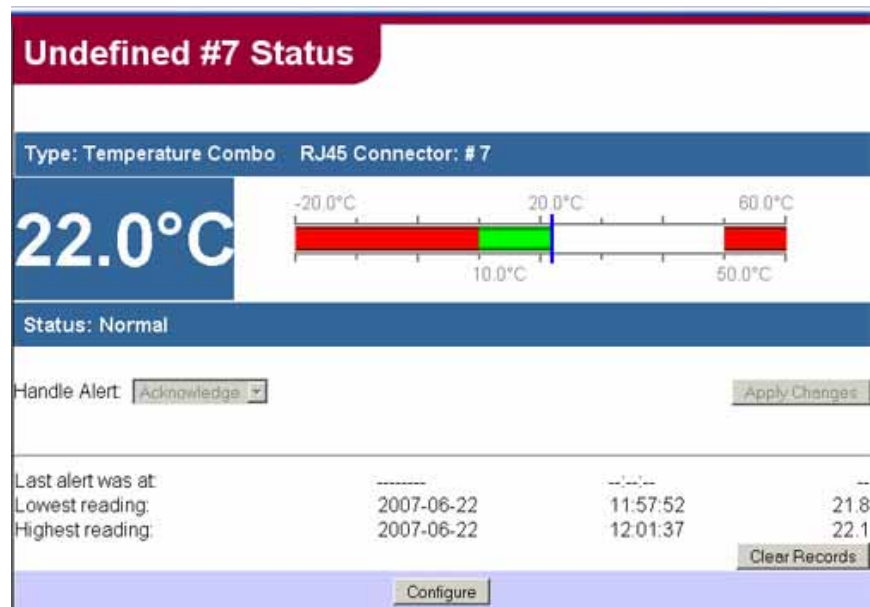


Figure 21- Internal Sensor Reading

If the sensor is in alert status, the user has the option to either **acknowledge** the alert or **dismiss** it. If the user acknowledges the alert, no additional alert messages will be sent during that alert status cycle. If the user dismisses the alert, another alert message will be sent once the “notify again after” time designated on the configuration page (below) elapses.

A **Configure** button at the bottom of the page allows the user to configure parameters of the sensor.

If the sensor is removed or communication lost for any reason (example: cable disconnected) the unit will detect this and show the sensor in "Non Responding" status. Question marks (???) will replace the name in the menu on the left. In this way the user will know the sensor has a problem or as been accidentally disconnected. If the user wants to remove a sensor (including a sensor now replaced by question marks) from the list, it must be done manually using the **Remove** button on the configuration page.

Figure 22- Sensor Configuration Page

External Sensor Configuration

Type

Description: Each sensor can be given a unique description. Descriptions can be from 1-80 characters in length and include most characters. They cannot contain a backslash (\) or quotation mark ("). Descriptions will be used in e-mail alerts in the DESCRIPTION field.

Within this section the alerts regarding this sensor can be disabled.

Note: If alerts for a sensor are disabled, the associated output action (see "Outputs"- page 25) will still take place. There just won't be any alert notifications that this is occurring. For example, this might be used to turn ON a device, such as a fan, when the server room gets too warm, and OFF again when the temperature returns to normal. An alert message may not be desired under these circumstances.

Note: if the user wants to disable alerts for a sensor after the sensor is already in alert status, the user must either acknowledge or dismiss the alert first.

Group: This is the group of sensors this sensor will belong to. Users that subscribe to alerts from this group will receive alerts from sensors within the group. Each sensor can be configured to send alerts. Up to 16 sensor groups can be defined. Each user can receive alerts from any or all of the sensor groups.

Minimum Level: This shows the minimum value supported by the sensor. It is factory configured for each type of sensor and cannot be changed. Its value is detected when connecting the sensor.

Maximum Level: This shows the maximum value supported by the sensor. It is factory configured for each type of sensor and cannot be changed. Its value is detected when connecting the sensor.

Units: (only for Temperature sensors) This lets the operator chose between Celsius and Fahrenheit as the temperature measurement unit.

Thresholds

Minimum Threshold: The user must define the lowest acceptable value for the sensors. If the sensor measures a value below this threshold, the sensor will move to alert status. The assigned value should be within the range defined by Minimum Level and Maximum Level and lower than the assigned Maximum Threshold value. If values out of the range are entered, they will be automatically adjusted to be within range.

Maximum Threshold: The user must define the highest acceptable value for the sensors. If the sensor measures a value above this threshold, the sensor will move to alert status. The assigned value should be within the range defined by Minimum Level and Maximum Level and higher than the assigned Minimum Threshold value. If values out of the range are entered, they will be automatically adjusted to be within range.

Sampling

Sampling Period: Determines how often the displayed sensor value is refreshed on the Sensor page. A numeric value and a measurement unit (minimum 1 seconds, maximum 999 minutes) should be entered.

Note: *Regardless of the sampling period ENVIROMUX will read the sensor every second and will send an alert as needed based on the configured values. An extended sampling period will not delay an alert response from ENVIROMUX. The shorter the sampling period, the more traffic that will be seen on the network.*

Add Data to Log File: This is a check-box that lets the user decide if the data sampled should be recorded in the Data Log.

Add reading to log file every: Enter the time period between logged measurements.

Alert Timing

Alert Delay: The alert delay is an amount of time the sensor must be in an alert condition before an alert is sent. This provides some protection against false alarms. The Alert Delay value can be set for 0-999 seconds or minutes.

Example:

The maximum threshold of a temperature sensor is 90 F, and the temperature of the monitored area is fluctuating between 88 and 91 degrees:

Reading # (taken 1/ second)	Value	Action (with delay set @ 3 seconds)
1	88F	
2	89F	
3	90F	Ignored
4	89F	
5	90F	Ignored
6	89F	
7	90F	Ignored
8	90F	Ignored
9	90F	Alert sent
10	89F	

The sensor is in an alert condition in Reading 3 but is back within the acceptable range in Reading 4. At Reading 5, the sensor is in an alert condition again. Without the Alert Delay set, alerts will be sent for both Reading 3 and Reading 5. If the Alert Delay had been set to 3 seconds, an alert would only be sent if the sensor had made three consecutive readings in an alert condition (since readings are made every second). In this case, an alert will not be sent until Reading 9.

Notify Again: Specifies the amount of time before an alert message is repeated. The repeated alert can be set to occur from 1-999 seconds, minutes, or hours.

Notify when return to normal: The user can also be notified when the sensor readings have returned to the normal range by selecting the "**Notify when return to normal**" box for a sensor.

Alert Notifications

The alert can be configured to notify one or more users via email, SNMP traps (V1), Syslog messages, or SMS alerts. It can also activate an audible siren, or an alarm beacon. Alerts are also indicated on the "Int Alert" or "Ext Alert" LEDs on the front of the ENVIROMUX and in the WEB interface.

Outputs

Each sensor can be associated with one of the connections labeled "Output Relays" (see page 23), and that connection can be set to open or close the contacts of the relay either on alert, or when returning to normal. The tamper can also block the output command generated by the alert. In this way other devices can be controlled by sensor and tamper alerts. Examples of this can be found in the wiring examples on pages 68 and 69.

Contact Sensors

Contact Sensors are sensors that close or open a contact according to the sensor condition. Their presence and their type cannot be automatically detected by the RJ45 Sensor port. The sensors have to be manually added to the unit list by the administrator or a user with administrator privileges.

Add a Contact Sensor to RJ45 Sensor port

When adding a contact sensor to an RJ45 Sensor port, the administrator must specify the type of sensor and the RJ45 connector where the sensor is connected.

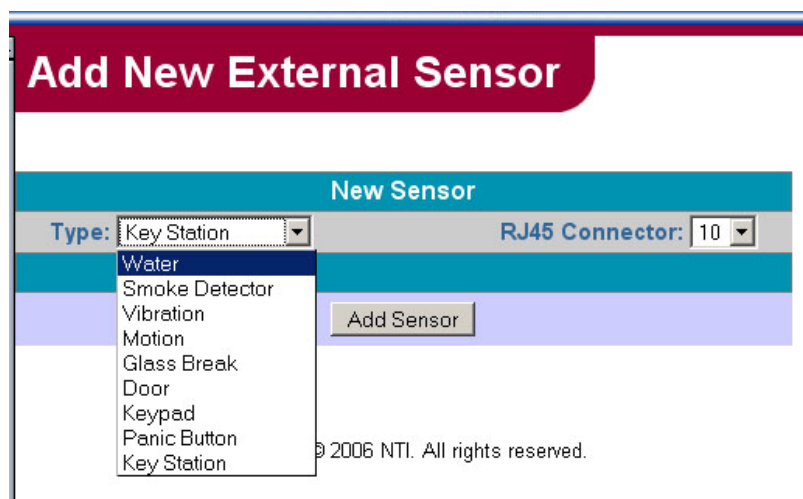


Figure 23- Add External Sensor

- If the sensor is created, it gets the default name **Undefined #n**.
- If the connector was already in use and has a sensor already defined for it, an error message will be displayed at the bottom of the Summary page.

A menu sub-item will be created for the sensor in the left menu, under **Monitoring->External Sensors**. Also a web page will be created for the sensor. The administrator can further set the properties of the sensor from the sensor's Configuration web page. If the sensor is disconnected and no longer used, it has to be removed manually from the list using the **Remove** button on the sensor's configuration page (see Fig. 22).

Motion Detector Sensor Configuration

Type: Motion DetectorRJ45 Connector: # 7

Description:Undefined #7

Group:Group # 0

☒ Disable alerts for this sensor

Normal Status

Normal Status:Closed

☒ Enable Tamper Alert

Tamper Normal StatusOpen

Sampling

Sampling Period:1Sec

☐ Add to Data Log File

Add Reading to Log File Every:60Min

Alert Timing

Alert Delay:0Sec

Notify again after:30Min

☒ Notify when return to normal

Alert Notifications

☐ Enable E-mail Alerts

☐ Enable SNMP Traps

☐ Enable SMS Alerts

☐ Enable Syslog Alerts

☐ Enable Siren Alerts

☐ Enable Alarm Beacon

Outputs

Associate Output4

On alertclose the output contact

On return to normalopen the output contact

☒ Block output command on tamper alert

Apply

Status

Remove

Figure 24- Contact Sensor Configuration

Digital Inputs

The "Digital In" terminals (page 9) are for easy installation of contact sensors (as opposed to using the RJ45 sensor ports). Connect up to 8 different contact sensors having either 2-wire contacts (for open or closed circuit sensing) or 4-wire contacts (for open or closed circuit sensors requiring 12V power supplies to operate). These sensors can be accessed from the **Monitoring** -> **Digital Inputs** item in the left side menu of the unit web page. The management is similar to Contact Sensor (page 25).

Note: The "Normal Status" of the contact sensor must be set to either open or closed, depending on the contact position of the sensor connected to it. If the sensor connected has a normally closed switch position at rest, the Normal Status should be set to "Closed". If the connected sensor has a normally-open switch position, the Normal Status should be set to "Open".

Digital Input Configuration

Type: Digital Input			
Description:	<input type="text" value="Digital Input #1"/>	Group:	<input type="text" value="Group # 0"/>
<input type="checkbox"/> Disable alerts for this sensor			
Normal Status			
Normal Status: <input type="text" value="Open"/>			
Sampling			
Sampling Period:	<input type="text" value="20"/> <input type="text" value="Sec"/>	<input type="checkbox"/> Add to Data Log File	
Add reading to log file every: <input type="text" value="60"/> <input type="text" value="Min"/>			
Alert Timing			
Alert Delay:	<input type="text" value="30"/> <input type="text" value="Sec"/>	Notify again after:	<input type="text" value="30"/> <input type="text" value="Min"/>
<input type="checkbox"/> Notify when return to normal			
Alert Notifications			
<input checked="" type="checkbox"/> Enable E-mail Alerts	<input type="checkbox"/> Enable SNMP Traps	<input type="checkbox"/> Enable SMS Alerts	
<input type="checkbox"/> Enable Syslog Alerts	<input checked="" type="checkbox"/> Enable Siren Alerts	<input type="checkbox"/> Enable Alarm Beacon	
Outputs			
Associate output <input type="text" value="None"/>		On alert <input type="text" value="open"/>	the output contact
		On return to normal <input type="text" value="open"/>	the output contact
<input type="button" value="Apply"/> <input type="button" value="Status"/> <input type="button" value="Remove"/>			

Figure 25- Digital Input Configuration

Output Relays

There are 4 output relays available for the control of external devices. These devices may be switched ON or OFF provided they do not exceed the maximum ratings for the output relay: 30VDC, 1A or 100VAC, 0.5A (see “Output Relays” specifications on page 61). The default status of each relay (the state the relay will revert to in the absence of power) is normally-open. When power is applied to the ENVIROMUX through either the AC input or the battery, the “Normal Status” (the state the relay will be in during normal operation) can be configured as either normally-open or normally-closed (see Fig. 27).

Note: When the ENVIRMUX is powered OFF with the battery completely drained, each relay will revert to the normally-open (N.O.) state, regardless of the “Normal Status” setting.

Once configured, output relays are controlled by their associated sensor and can be programmed to change state (from normally-open to normally-closed or vice versa) on an alert or on the return to normal conditions. Programming is done on the configuration page of the associated sensor. Each output relay can be associated with any sensor.

Note: Do not use more than one input to place the same output relay in two different states. This may cause unpredictable results.

To manually change the state of an output relay, choose the desired state in the “Set Output” block (see Fig. 26) and click “Apply Changes”.

The screenshot shows a web interface for "LED 1 Status". At the top, it says "Type: Output Relay". Below that, a large blue box displays the word "Open". Underneath, it says "Status: Normal". There is a "Set Output:" label followed by a dropdown menu currently showing "Close". To the right of this is an "Apply Changes" button. At the bottom of the interface is a "Configure" button.

Figure 26- Output Relay manual control page

Effects of an output relay changing state that can be configured include:

- * the sensor group for determining what users will be alerted of the state change
- * the method of alert notification, if any

The screenshot shows the "Output Relay Configuration" page. It has a header "Type: Output Relay". Below that, "Description:" is set to "LED 1" and "Group:" is set to "Group #1". A section titled "Normal Status" shows "Normal Status:" with a dropdown menu set to "Open". Below this is a section titled "Notify when status is changed" containing several checkboxes: "Enable E-mail Alerts", "Enable SNMP Traps", "Enable SMS Alerts", "Enable Syslog Alerts", "Enable Siren Alerts", and "Enable Alarm Beacon". At the bottom are "Apply" and "Status" buttons.

Figure 27- Output relay configuration page

IP Devices

Up to 64 IP addresses can be assigned to be monitored by ENVIROMUX. They will be displayed under the **Monitoring->IP Devices** item in the left side menu. The ENVIROMUX will periodically ping (test) these addresses to determine whether or not they are up and running. If the address is not running, an alert will be recorded.

For each device the user can configure the

- * IP address,
- * the name,
- * the sensor group the IP device will belong to
- * the ping period (period of time between two consecutive tests),
- * the time-out period (in seconds) in which the address should respond
- * the number of times the ENIROMUX should ping the address before reporting an alert
- * how often, if at all, the reading taken should be added to the data log.

If the address fails to respond within the time-out for the selected number of times it will generate an alert. It will be tested again after the programmed period of time.

Just as with other sensors, the method of alert notification and the effect, if any, on output contacts can be configured in response to IP address connection failures.

IP Device Configuration

Type: IP Device

Description: Group:

IP Address:

☐ Disable alerts for this sensor

Ping Timing

Ping Period:

Timeout:

Nb of Retries:

☐ Add to Data Log File

Add Reading to Log File Every:

Notify again after:

☐ Notify when return to normal

Alert Notifications

☒ Enable E-mail Alerts ☐ Enable SNMP Traps ☐ Enable SMS Alerts

☐ Enable Syslog Alerts ☐ Enable Siren Alerts ☐ Enable Alarm Beacon

Outputs

Associate Output

On alert the output contact

On return to normal the output contact

Figure 28- IP Device Configuration

Web Cams

The Web Cams page displays the video snapshots of up to 8 monitored web cameras. ENVIROMUX will display the video from specified IP addresses and provide images 320 x 240 resolution. Place a name, the URL or IP address of the link, and the name of the image taken by the camera in the blocks provided (examples in Figure 29), click the "Add to view" checkbox, and click APPLY at the bottom of the page. Then click on View (**Monitoring->Web Cams->View**) to see the images taken by those cameras. The images can be set to be refreshed every 100 msec (.1 second) up to 99,900 msec (almost 100 seconds). The user can click on any image and be connected to the site defined by the Link (below).

Web Cameras Configuration

Web camera #1

Name:My desk

☒Add to view

Image:192.168.3.72/jpg/image.jpg

Link:192.168.3.72

Refresh Rate:1x 100msec

Web camera #2

Name:Front Door

☐Add to view

Image:192.168.3.75/jpg/image.jpg

Link:192.168.3.75

Refresh Rate:1x 100msec

Web camera #3

Name:Back Door

☐Add to view

Image:192.168.3.76/jpg/image.jpg

Link:192.168.3.76

Refresh Rate:1x 100msec

Web camera #4

Figure 29- Web Cams Configuration

Administration

From the administration section there are several sub sections for configuring ENVIROMUX

SETTINGS	
Enterprise	Fields for assigning the company name, address, contact person, their e-mail address, phone number, and GSM modem settings including cell phone number and baud rate.
Network	Fields for providing all the network settings ENVIROMUX will need to connect to and email to users
SNMP Agent	Apply SNMP agent settings
Date & Time	Fields for date and time manual input or SNTP server settings for automatic input
Serial Port	Communication settings for the Console port for connection to a terminal
USERS	
Root	Fields for configuring the root user to use ENVIROMUX including changing the root password
Add User	Fields for setting up users, passwords, and editing user settings
Edit Groups	Fields for naming each of the sensor groups
ADVANCED	
Cascade	Fields for defining whether ENVIROMUX is a standalone system or one of up to four units in a cascaded system either directly connected or connected through the Ethernet
Configuration	For saving or loading a file containing the full configuration of the ENVIROMUX including the log file
Update Firmware	For updating the firmware of the ENVIROMUX when improved software becomes available.
REBOOT/SHUTDOWN	
Enables user to reboot or shutdown the ENVIROMUX using the web interface	

ENTERPRISE SETUP

Enterprise Settings:

Enterprise Name:

Location:

Contact:

Phone:

E-mail:

GSM Phone #:

Baud Rate:

GSM Modem Not Present

Apply

Figure 30- Enterprise Setup Page

Settings-Enterprise Setup

The Enterprise Setup page (**Administration -> Settings -> Enterprise**) is used to enter basic company information to be applied to the body of alerts. Enter the information to the blocks provided with your company name, location, the contact person that alert e-mails should refer to, the phone number to reach them, and their e-mail address. If a cell phone will be used as an alert method, a GSM modem will be needed and the cell phone number and baud rate that is compatible with that modem will be needed. If GSM modem has not yet been connected, the message "GSM Modem Not Present" will appear on the setup menu. The modem must be powered ON and connected before the ENVIROMUX is powered ON.

Settings-Network Setup

From the Network Setup page (**Administration->Settings-> Network**) the administrator can either choose to have the DNS information filled in automatically by the DHCP server, or manually fill in the fields to have a static address.

If the administrator chooses to have the DNS information filled in automatically, the SMTP server and port number still need to be entered for e-mail alerts to work. If the SMTP server requires a password in order for users to send emails, the network administrator must first assign a user name and password to the ENVIROMUX. Then apply the user name and password to the "User" and "Password" fields on the Network Setup page.

Note: The SMTP server port number is shown in Fig. 31 as "25". This is a common port number assigned, but not necessarily the port number assigned to your SMTP server.

The administrator may assign a different HTTP Server Port than is used by most servers (80). This might be desired if the administrator wants a secure connection.

Note: If the port number is changed and forgotten, to determine what it has been changed to connect the ENVIROMUX for RS232 control (page 11) and review the Network Settings (page 48).

NETWORK SETUP

Network Settings:

☐ Obtain an IP address automatically
☒ Use the following IP address:

IP Address:
 Subnet Mask:
 Default Gateway:
 Preferred DNS Server:
 Alternate DNS Server:

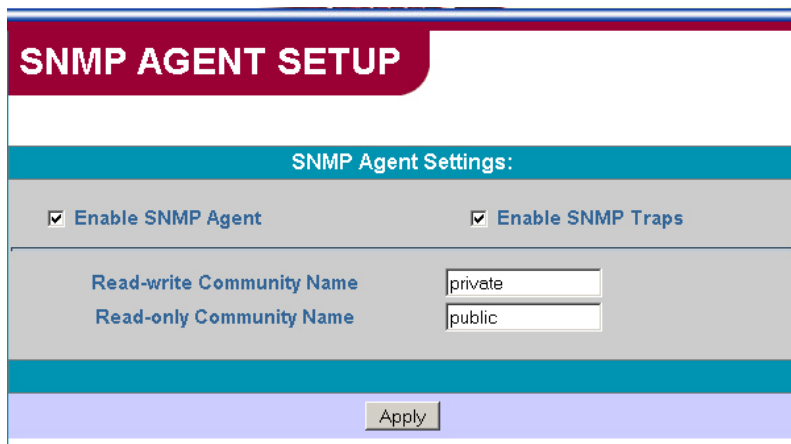
HTTP Server Port:

SMTP Server: Port:
☒ Use name and password

User:
 Password:

Figure 31- Network Setup Page

Settings-SNMP Agent



The image shows the 'SNMP AGENT SETUP' page. It has a title bar 'SNMP AGENT SETUP' in a dark red box. Below it is a section 'SNMP Agent Settings:' with two checkboxes: 'Enable SNMP Agent' and 'Enable SNMP Traps', both of which are checked. Below these are two text input fields: 'Read-write Community Name' with the value 'private' and 'Read-only Community Name' with the value 'public'. At the bottom is an 'Apply' button.

Figure 32- SNMP Agent Setup Page

The SNMP Agent Setup page (**Administration->Settings->SNMP Agent**) is used to enable SNMP messages.

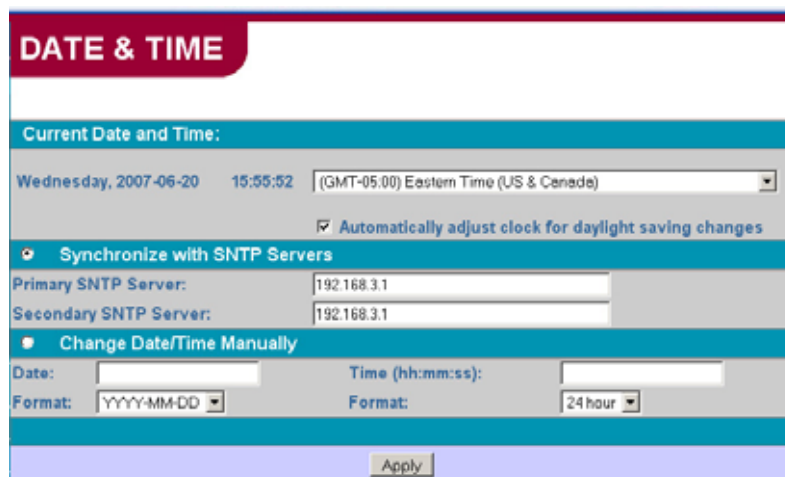
To enable the SNMP Agent, click on the associated checkbox.

To enable SNMP traps to be sent, click on the associated checkbox.

Apply names to the "Read-write Community Name" and "Read-only Community Name" as applicable.

Note: For changes to take effect, the ENVIROMUX must be rebooted. (See page 42 for "SHUTDOWN/REBOOT".)

Settings-Date and Time



The image shows the 'DATE & TIME' setup page. It has a title bar 'DATE & TIME' in a dark red box. Below it is a section 'Current Date and Time:' showing 'Wednesday, 2007-06-20 15:55:52' and a time zone dropdown set to '(GMT-05:00) Eastern Time (US & Canada)'. There is a checkbox 'Automatically adjust clock for daylight saving changes' which is checked. Below this is a section 'Synchronize with SNTP Servers' with two text input fields for 'Primary SNTP Server:' and 'Secondary SNTP Server:', both containing '192.168.3.1'. Below that is a section 'Change Date/Time Manually' with 'Date:' and 'Time (hh:mm:ss):' input fields, and 'Format:' dropdowns set to 'YYYY-MM-DD' and '24 hour'. At the bottom is an 'Apply' button.

FYI-
The ENVIROMUX
complies with the new
U.S.-Daylight Saving
Time rules (passed in
2005).

Figure 33- Setup Date & Time

The Date and Time of the ENVIROMUX (**Administration->Settings->Date & Time**) can be either manually setup to use an onboard clock or set to be synchronized with an SNTP server.

To synchronize it, click on the checkbox "Synchronize with SNTP Servers" and enter the primary and secondary SNTP server IP addresses (even if the primary is the same as the secondary). Enter the time zone that the ENVIROMUX should be set to.

To set it manually, click on the checkbox "Change Date/Time Manually". Select the desired date format from the drop-down box and enter the date. Select the format of the time of day (24 hours, AM, or PM) and enter the time accordingly.

In order to have the time change in accordance Daylight Saving Time rules, place a checkmark in the block "Automatically adjust clock for daylight saving changes" and select the appropriate time zone in the box above.

Click on "Apply" when finished.

Settings-Serial Port Setup

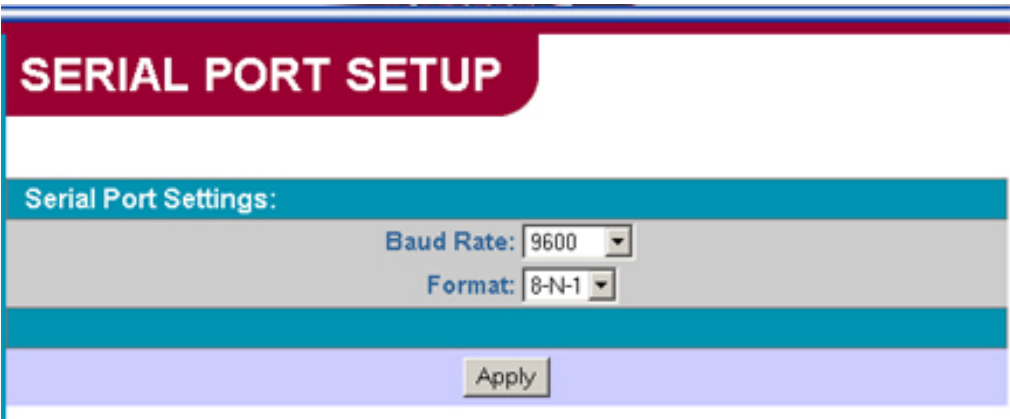


Figure 34- Serial Port Setup Page

The ENVIROMUX serial port (labeled “Console”) must be setup to communicate with the terminal (page 11). Under **Administration ->Settings-> Serial Port**, set the baud rate and format to the same settings as those of the port on the connected terminal.

Users-Root

Under **Administration-> Users->Root**, the root user (or any user with administrator rights) can change the root password and configure how the root user will receive alert messages. Users with administrative rights can change all configuration settings except for the root user name.

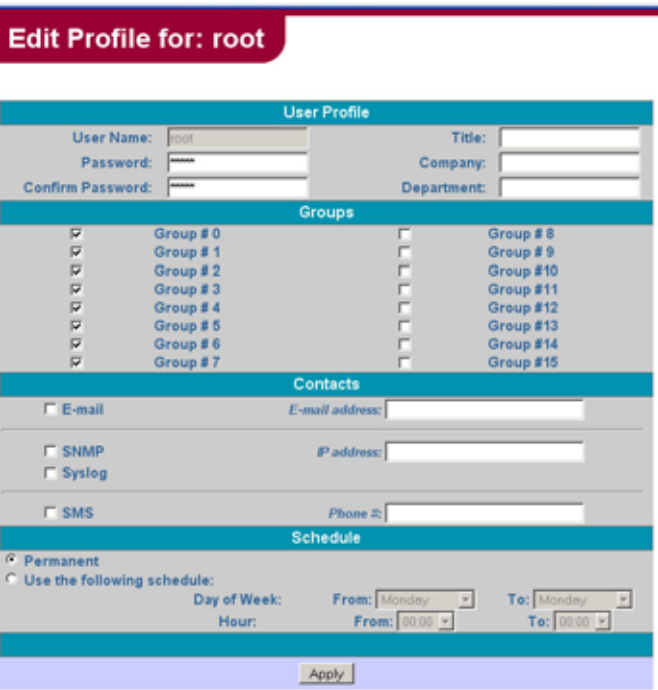


Figure 35- Edit user profile for root user

Users- Add User

Under **Administration-> Users->Add User**, up to 8 users can be added and configured with either user or administrative rights. Users with administrative rights can change all configuration settings within the ENVIROMUX. Users with user rights can only see the current readings of the sensors and change their own passwords.



Add New User Profile	
User Profile	
User Name:	<input type="text"/>
Password:	<input type="password"/>
Confirm Password:	<input type="password"/>
Title:	<input type="text"/>
Company:	<input type="text"/>
Department:	<input type="text"/>
<input type="button" value="Add User"/>	

Figure 36- Add New User Page

To add a user, a user with administrator rights must click on **Administration->Users->Add User**. An "Add New User Profile" window will appear where the initial basic user information can be entered. Once that information is entered, the next window provides blocks for additional user configuration.

Edit Profile for: user1

User Profile	
User Name:	user1
Password:	XXXXXXXX
Confirm Password:	XXXXXXXX
Title:	engineer
Company:	YourCompany
Department:	IT

Permissions	
<input type="radio"/> This User has <u>Administrator</u> rights	<input checked="" type="radio"/> This User has <u>User</u> rights

Groups	
<input checked="" type="checkbox"/>	Group # 1
<input checked="" type="checkbox"/>	Group # 2
<input checked="" type="checkbox"/>	Group # 3
<input checked="" type="checkbox"/>	Group # 4
<input checked="" type="checkbox"/>	Group # 5
<input checked="" type="checkbox"/>	Group # 6
<input checked="" type="checkbox"/>	Group # 7
<input checked="" type="checkbox"/>	Group # 8
<input checked="" type="checkbox"/>	Group # 9
<input checked="" type="checkbox"/>	Group #10
<input checked="" type="checkbox"/>	Group #11
<input checked="" type="checkbox"/>	Group #12
<input checked="" type="checkbox"/>	Group #13
<input checked="" type="checkbox"/>	Group #14
<input checked="" type="checkbox"/>	Group #15
<input checked="" type="checkbox"/>	Group #16

Contacts	
<input type="checkbox"/> E-mail	E-mail address: <input type="text"/>
<input type="checkbox"/> SNMP	IP address: <input type="text"/>
<input type="checkbox"/> Syslog	
<input type="checkbox"/> SMS	Phone #: <input type="text"/>

Schedule	
<input checked="" type="radio"/> Permanent	
<input type="radio"/> Use the following schedule:	
Day of Week:	From: Monday To: Monday
Hour:	From: 00:00 To: 00:00

Apply Delete User

Figure 37- Edit User Profile

The User Profile (**Administration->Users->any user**) contains all the user settings for restrictions or permission of a user to use ENVIROMUX.

Within the profile the administrator:

- sets the password (must be at least 5 characters)
- decides the level of security for the user
- determines which sensor group alerts will come to the user and which ones will not
- sets the means by which a user will receive alert messages
- enters the user e-mail address
- enters the IP address for the Syslog and SNMP server
- enters the phone number to be called if a GSM modem is installed to receive SMS messages
- sets the schedule in which a user will receive alert messages.

If a user is set with only "User" rights instead of "Administrator" rights, the user will only be able to see current sensor readings and to change their password if so desired. No other ENVIROMUX access is possible.

Users-Edit Groups

Groups are used to create a common relationship between sensors. From the **Administration->Users>Edit Groups** page the user with administrator permissions can assign names for the groups sensors belong to. Up to 16 groups can be assigned.

Group Names	
1:	Group # 1
2:	Group # 2
3:	Group # 3
4:	Group # 4
5:	Group # 5
6:	Group # 6
7:	Group # 7
8:	Group # 8
9:	Group # 9
10:	Group #10
11:	Group #11
12:	Group #12
13:	Group #13
14:	Group #14
15:	Group #15
16:	Group #16

Apply

Figure 38- Edit Groups Page

For example, suppose there are two sensors installed in Server Room #1: a Temperature Sensor and a Door Contact Sensor. The User responsible for monitoring Server Room #1 would like to be notified when either one of the sensors is in alert status. This can be accomplished in two ways:

1. A single group named "Server Room #1" is created. Both sensors located in Server Room #1 are assigned to this group (from the sensor configuration page (page 23)). The User can then subscribe to the "Server Room #1" group (from the "Groups" section of the User Profile page (page 36)), and select the method in which to be alerted (from the "Contacts" section of the User Profile page). The User will now receive alerts from all sensors in the "Server Room #1" group.
2. Two groups are created: one named "Temperature Sensors" and one name "Contact Sensors." Each sensor is assigned to its respective group (from the sensor configuration page (page 23)). The User can then subscribe to both groups (from the "Groups" section of the User Profile page (page 36)) and select the method of alert contact. The User will now receive alerts from all sensors in the "Temperature Sensors" group and the "Contact Sensors" group. However, some sensors in these groups may not be located in Server Room # 1.

Advanced-Cascade Configuration

From the **Administration->Advanced>Cascade** menu, the administrator can configure the ENVIROMUX to either be

NOTE: As of this release of the firmware, cascading is not supported in ENVIROMUX. This feature will soon be supported. See page 41 or 56 for instruction on how to upgrade the firmware when available.

- a standalone master system,
- a master with up to 3 local slaves (directly connected)
- a master with up to 3 Ethernet slaves (Ethernet connected)
- a local slave #1, #2, or #3
- an Ethernet slave #1, #2, or #3

Note: When ENVIROMUX units are connected as slaves, only their sensors and output relays are used and are monitored through the master unit.

If local slaves are connected,

1. Go to the Cascade Configuration page for each ENVIROMUX and using the choices in the drop down box on , select the position each ENVIROMUX will hold in the cascaded system (examples seen in Fig. 39).
2. Press "Apply".
3. Connect the slaves to the master as shown below using CAT5/5e/6 patch cables with RJ45 connectors wired straight thru (pin 1 to pin 1, pin 2 to pin 2, etc.) (max. 25 feet long).
4. Power cycle each slave unit
5. Power cycle the master unit

Note: The master and each slave must be power cycled for changes to take effect.

Sensors attached to the connected slaves will appear when viewing the Summary Page for the master. The Beacon and Siren connections of the slave units are not used.

MASTER CONFIGURATION

Cascade Configuration

Settings

This Unit Is: Master with 3 local slaves

IP Address of Slave #1: 192.168.3.22

IP Address of Slave #2: 192.168.3.23

IP Address of Slave #3: 192.168.3.24

Apply

SLAVE CONFIGURATION

Cascade Configuration

Settings

This Unit Is: Local Slave #1

IP Address of Slave #1: 192.168.1.102

IP Address of Slave #2: 192.168.3.216

IP Address of Slave #3: 192.168.3.217

Apply

Figure 39- Cascade configuration with local slaves

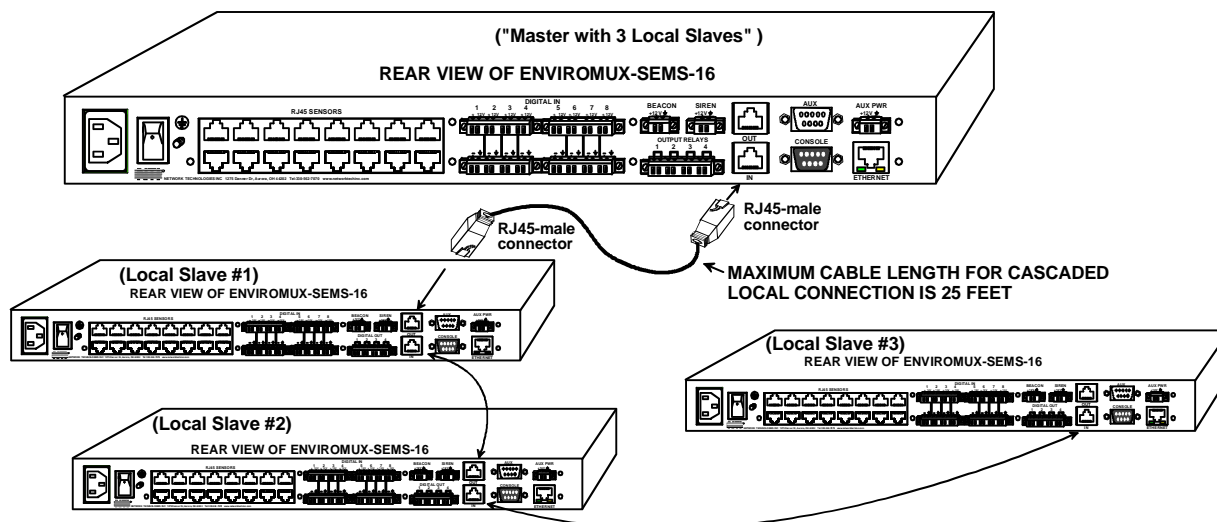


Figure 40- Master with local slaves

If Ethernet slaves are connected,

1. Each Ethernet slave must be given a unique IP address (page 32)
2. Go to the Cascade Configuration page for each ENVIROMUX and using the choices in the drop down box , select the position unit will hold in the cascaded system (examples seen in Fig. 41).
3. Press "Apply" to save the change.
4. After the position is selected for the master, the blocks below will be available to enter the IP address of each Ethernet slave to be monitored by the master.
5. Press "Apply" to save the changes.
6. Power cycle each slave
7. Power cycle the master

Note: The master and each slave must be power cycled for changes to take effect.

Sensors attached to the connected slaves will appear when viewing the Summary Page for the master. The Beacon and Siren connections of the slave units are not used.

MASTER CONFIGURATION	SLAVE CONFIGURATION
<h3>Cascade Configuration</h3> <div> Settings This Unit Is: Master with 2 ethernet slaves IP Address of Slave #1: <input type="text" value="192.168.3.22"/> IP Address of Slave #2: <input type="text" value="192.168.3.23"/> IP Address of Slave #3: <input type="text" value="192.168.3.217"/> <input type="button" value="Apply"/> </div>	<h3>Cascade Configuration</h3> <div> Settings This Unit Is: Ethernet Slave #1 IP Address of Slave #1: <input type="text" value="192.168.1.102"/> IP Address of Slave #2: <input type="text" value="192.168.3.216"/> IP Address of Slave #3: <input type="text" value="192.168.3.217"/> <input type="button" value="Apply"/> </div>

Figure 41- Cascade configuration with Ethernet slaves

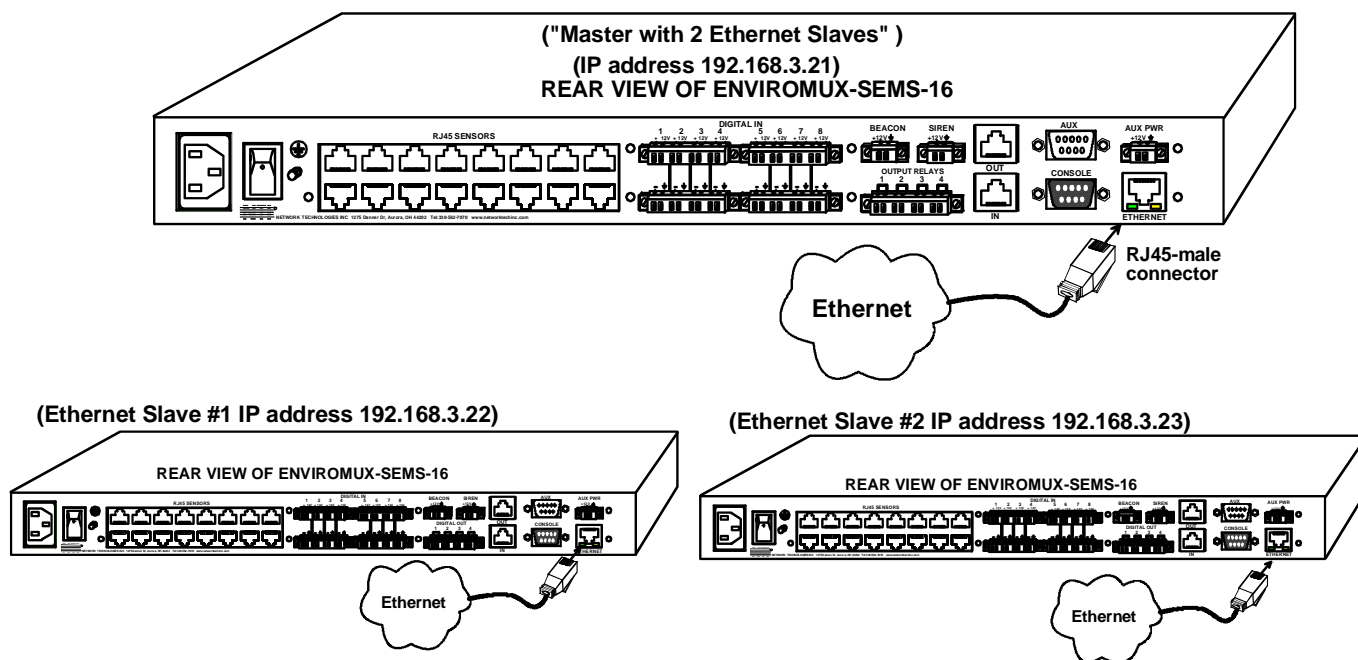


Figure 42- Master with Ethernet slaves

Advanced-Configuration File

The **Administration->Advanced>Configuration** page has 4 options:

- Save all of the configuration characteristics of the ENVIROMUX to a file on an Ethernet connected PC to be reloaded as desired.
- Load a file already saved and quickly restore the ENVIROMUX configuration to a previous state.
- Reset all sensors only to factory-default settings
- Reset the ENVIROMUX system configuration to factory-default settings.

Save Configuration File

Configuration settings for sensors, webcams, all things under the topic of "Monitoring" (page 19) can be saved to a restorable file. (Passwords and network settings are not saved, for security reasons.) To save the current ENVIROMUX configuration, click on "Save Configuration File". A window will open showing a directory in the connected PC. If this is not the directory where configuration files should be saved, browse to the desired directory and save the file using a name that has some meaning to you. Once saved, the file can be reloaded at any time.

Load Configuration File

The "Load" button is used to overwrite the current ENVIROMUX configuration with the settings in a saved configuration file. To load an existing configuration file, click on "Browse". A window will open in the connected PC through which the user can locate and select a configuration file. Once chosen, click on "Load" to overwrite the present ENVIROMUX configuration settings with those in the loaded file.

Note: Before overwriting the existing configuration, consider whether the existing configuration should be saved first. If it will be saved, be sure to save the current configuration file under a different name than the configuration file to be loaded.

This is particularly useful when preparing to make changes to the configuration that may provide unsatisfactory results. If the configuration is saved in a file before changes are made, stepping backward and restoring the previous settings is as simple as clicking on the file saved. Just be sure to remember the name of the file saved and where in the PC it was saved.

The screenshot shows the ENVIROMUX Configuration page. It features a dark red header with the word "Configuration" in white. Below the header, the page is divided into four horizontal sections. The first section contains a button labeled "Save Configuration File". The second section contains the text "Configuration File:" followed by a text input field, a "Browse..." button, and a "Load" button. The third section contains two buttons: "Restore Default Sensors Settings" and "Restore Default System Settings".

Figure 43- ENVIROMUX Configuration Page

Advanced- Update Firmware

It may be desired, on occasion, to update the firmware in the ENVIROMUX. This can be done either through the Web Interface, or using RS232 (see page 56). This section explains how to update the firmware using the Web Interface.

Figure 44- Update Firmware Page

Under **Administration->Advance>Update Firmware** the user can change the firmware to a version that includes updates to the ENVIROMUX programming. A link in the menu will locate the current firmware file to be downloaded to the PC.

WARNING:

Failure to carefully follow these directions can permanently damage the product. Please read these directions in full before continuing. Do not, under any circumstances, reset or power-down the unit while the firmware is being updated. Do not attempt to update the firmware when a power-failure is likely, particularly if the "Low Batt" LED is blinking, indicating a failed battery.

- Follow these directions to update the firmware:
 1. Print out these instructions for reference during the update procedure.
 2. Download the firmware file from the NTI website to the PC.
 3. On the Update Firmware page, press <Browse> to browse to the firmware file on the PC.
 4. Click **Update Firmware**.
 5. Wait for the following message to appear:

**Upload Succeeded.
Flash of new image completed.
System will automatically restart.**

Note: It may take several minutes for a message to appear.

6. The ENVIROMUX-SEMS-16 will reset itself in 10 seconds, logging out all connections. After approximately 40 seconds, the ENVIROMUX-SEMS-16 should resume normal operation.
- If a message appears indicating that the Upload has failed, or that a non-fatal error has occurred:
 1. Ensure that the uploaded file is the NTI firmware file.
 2. Resume the process from step 2 above.

Note: This message does not indicate that damage to the product has occurred.
 - If a message appears indicating that there has been a fatal error:
 1. **DO NOT RESET OR POWER-DOWN THE PRODUCT.**
 2. Repeat the update process from the first step 2 above.
 3. If another Fatal Error message appears, call NTI tech-support at 1-800-742-8324 or 330-562-7070.

Note: The product should continue to run normally unless it is reset. However, damage may have occurred to the web server software that will prevent the product from starting up correctly.

REBOOT/SHUTDOWN

If a user wants to remotely reboot the ENVIROMUX to refresh settings (such as after changing settings in the SNMP Agent page (page 33), or if the user wants to shut down the ENVIROMUX during a power-failure, the REBOOT/SHUTDOWN page under the Administration section can be used.



Figure 45- Reboot/Shutdown page

The REBOOT/SHUTDOWN page shows the current status of the power supply(s) and backup battery (page 60). Click on the “Reboot” button to force the ENVIROMUX to shut down and then restore itself to normal operation. Any configuration changes that were made prior to this action will be made active.

Note: In the event of a power failure, using REBOOT will cause the ENVIROMUX to shut OFF.

Click on the “Shut Down” button to shut down the ENVIROMUX in the event of a power failure. During a power failure, this will be the only way the ENVIROMUX can be shut OFF. **The battery backup will power the ENVIROMUX for up to 1 hour.**

The power switch will only shut down the ENVIROMUX during normal operation. When using the “Shut Down” button, the user will be reminded to also shut OFF the power switch on the ENVIROMUX. If the power switch is not shut OFF, when AC power has been restored the ENVIROMUX will power ON automatically.

Note: If power is shutdown during a power failure, you will not be able to power ON the ENVIROMUX until after AC power has been restored.

Note: When using SHUTDOWN or REBOOT button, the user will be prompted to confirm the action (image below) before completing the action.

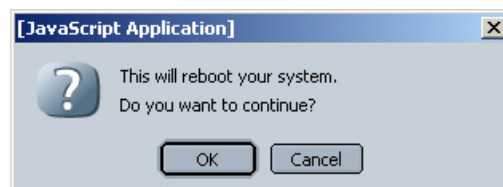


Figure 46- Reboot confirmation prompt

LOG

Under **Main Menu->Log**, the user will find links to pages where Event Log records and Data Log records can be viewed and managed. The maximum size of each log is 1000 entries, listed in chronological order.

View Event Log

The View Event Log page displays various happenings within the use of the ENVIROMUX and any alert conditions that occur. Power up, power down, alarm reports, alarm acknowledgements, logins, and others. The date and time of these occurrences are recorded and available for printing, viewing, or deletion. Log entries can be removed individually, in groups, or all at once. Event log messages are automatically sent to users as configured on the sensor configuration page (page 23) in addition to being recorded in the Event Log. The log can also be downloaded as a tab-delimited plain text file.

Select	Date & Time	Cause	Value	Message
<input type="checkbox"/>	2000-01-22 05:51:31	Start-up	--	System start-up
<input type="checkbox"/>	2000-01-22 05:51:36	Battery Notification	--	Battery connected
<input type="checkbox"/>	2000-01-22 05:51:55	Login	--	Admin logged in
<input type="checkbox"/>	2000-01-22 05:52:04	Alarm	100.0	Sensor "Undefined #13" (Connector 13): Value overcrossed thresholds
<input type="checkbox"/>	2000-01-22 05:52:04	Alarm	80.0	Sensor "Internal Humidity" (internal): Value overcrossed thresholds
<input type="checkbox"/>	2000-01-22 05:53:36	Logout	--	Admin logged out
<input type="checkbox"/>	2000-01-22 05:53:42	Login	--	Admin logged in

Figure 47- View Event Log

Sample of Event Log Message received via e-mail:

ENTERPRISE: NTI
 LOCATION: Danner Drive
 CONTACT: Sales Dept
 DESCRIPTION: Battery
 CONNECTOR: internal
 TYPE: Power
 MESSAGE: Battery disconnected
 VALUE: 14.2V

View Data Log

The View Data Log page displays the recorded sensor readings (configurable for each sensor- see page 23) .

The date and time of these readings are recorded and available for printing, viewing, or deletion. Log entries can be removed individually, in groups, or all at once. If desired, notification of Data log entries can be sent via e-mail, SNMP Trap, or Syslog as configured under Log Settings (see Fig. 49). The log can also be downloaded as a tab-delimited plain text file.

View Data Log

Data log free space: 100.0%

Select	Date & Time	Type	Value	Description
<input type="checkbox"/>				Data Log file is empty!

Select All Delete Delete All

Pages: 0 [1]

Download log file

Entries per page: 10

Figure 48- View Data Log

Sample of Data Log Message received via e-mail:

ENTERPRISE: NTI
 LOCATION: Danner Drive
 DESCRIPTION: Internal Temperature
 TIME: 2000-10-30 03:45:11
 TYPE: Temperature
 VALUE: 24.0C

Log Settings

The log's behavior upon reaching the maximum size can be configured (**Log->Settings**), allowing the log to wrap (overwrite oldest entries), stop logging, or clear the entire log and begin a new log. The entire log can be downloaded as a tab-delimited plain text file from the web interface at any time (see "View Data Log" above).

Users that are configured to receive alert or data logs from the group specified will also receive notification when the log files have reached 90% of their capacity (900 entries). Additionally, the administrator can choose to have the same users receive notification of each data log entry via email, SNMP trap, and/or Syslog by placing a checkmark in the associated checkboxes.

Log Settings

Event Log Settings

Group: Group #1

Overflow Actions:

☐ Discontinue Log ☐ Clear Log and start from beginning ☒ Wrap Log

Alert when reached 90% of logging capacity by:

☐ E-mail ☐ SNMP Traps ☐ SMS
☐ Buzzer ☐ Alarm Beacon ☐ Syslog

Data Log Settings

Group: Group #1

Remote Log Methods:

☐ E-mail ☐ SNMP Traps ☐ Syslog

Overflow Actions:

☐ Discontinue Log ☐ Clear Log and start from beginning ☒ Wrap Log

Alert when reached 90% of logging capacity by:

☐ E-mail ☐ SNMP Traps ☐ SMS
☐ Buzzer ☐ Alarm Beacon ☐ Syslog

Apply

Figure 49- Configure Log Settings

LINKS

Up to 64 links to external web pages can be added under the **Monitoring->Links** menu item. Links allow the user to quickly navigate to a URL or IP address with one click to the left menu. This could provide a quick and centralized access to web cameras, routers switches, etc. assuming they have a web page.

	Description	URL or IP Address
<input type="checkbox"/>	1: Anyplace	192.168.0.0
<input type="checkbox"/>	2: My Camera	192.168.0.1
<input type="checkbox"/>	3: mywebsite	www.mywebsite.com

Apply Delete Selected Add New

Figure 50- Configure Links to Favorites

To add a Link:

1. Apply a description to identify the link (up to 31 characters)
2. Apply IP Address or URL (up to 79 characters) of desired server or website.
3. Click "Apply"
4. Click "Add New" to add another Link (if space is available, up to 64 can be configured).

To remove a Link:

1. Click the box to the left of the Description to select the link
2. Click "Delete Selected"

LOG OUT

When a user is finished accessing the ENVIROMUX user interface, it is recommended that the user click on the LOGOUT link in the side menu. If the LOGOUT link isn't used, the web interface can be accessed by anyone that sits down to the desk where it is logged in until ENVIROMUX automatically logs the user out. The automatic logout will only occur after 8 hours of access time.

RS232 OR TELNET CONNECTION

RS232 Connection

This section assumes that a terminal has been connected to ENVIROMUX as described on page 11 (see Fig. 9) and that both the ENVIROMUX and terminal RS232 ports have been configured (using HyperTerminal in the figure below) to the same port settings (default parameters are: 9600 bps, 8-N-1-no flow).

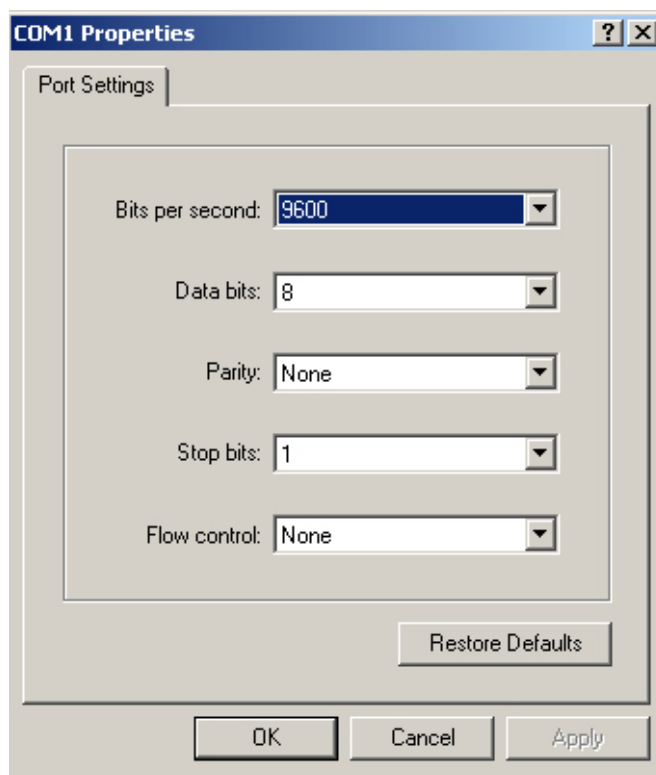


Figure 51- RS232 Port Properties Configuration

Telnet Connection

The user may connect to ENVIROMUX using a Telnet client either 1) through HyperTerminal or 2) from a command prompt. Before Telnet can be used, two conditions must be met:

1. A terminal must first be connected to ENVIROMUX through the ETHERNET port, either remotely, or directly (see "Ethernet Connection for Remote User Control" on page 11).
2. Telnet must be enabled. Telnet is disabled by default, and can be enabled by first connecting through RS232 (above) and then using Main Menu item 5 (see "Enable/Disable Telnet Server" on page 51).

Telnet will remain enabled even if power is cycled to the ENVIROMUX. With Telnet enabled, once ENVIROMUX is setup it can be accessed remotely in case the user needs limited access due to the Web Interface being unavailable.

The Telnet menus and behavior are identical to controlling ENVIROMUX using a connected terminal with RS232.

Telnet via HyperTerminal

Open HyperTerminal and configure the connection to use TCP/IP. Enter the IP address of ENVIROMUX (default is 192.168.1.21) and port number 5900 (see 52).

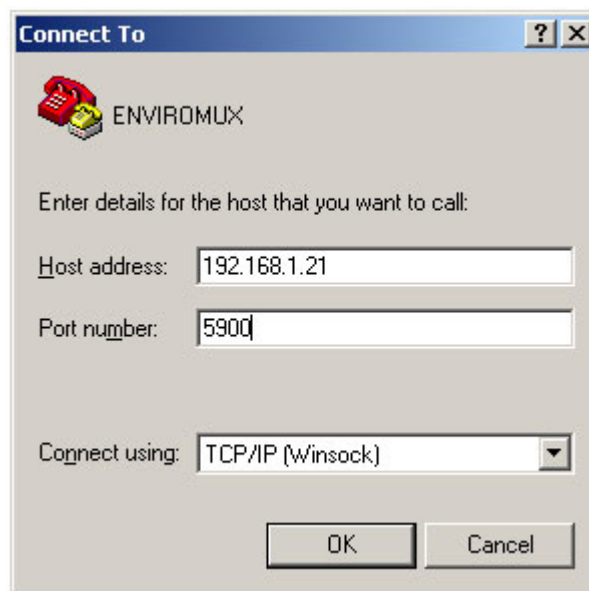


Figure 52- Telnet connection via HyperTerminal

Telnet via Command Prompt

At a command prompt (DOS window), type the following command to connect to ENVIROMUX:

C:\>telnet 192.168.1.21 5900 (or substitute current IP address)

Press **<Enter>** and continue below under “Login to the Main Menu”.

Log In to the Main Menu

With the HyperTerminal window open, press the **<Enter>** key. The following message will appear:

```
Network Technologies Inc.  
ENVIROMUX-SEMS-16 V1.1  
  
Enter password:>
```

Enter the root password **(default is “admin”)**

Only the “**root**” user can access this menu. Other users cannot access it, even if they have administrator rights.

Passwords are case sensitive. The administrator username cannot be changed from "root", but the password should be changed (see page 34).

The Main Menu will be displayed.

Main Menu

```

MAIN MENU
=====
1. Configure Enterprise
2. Display Network Settings
3. Configure Network Settings
4. Change Password
5. Enable/Disable Telnet Server
6. Configure SNMP
7. Configure Date & Time
8. Monitoring
9. Restore Settings to Defaults
A. Reboot
B. Logout & Exit
C. Upgrade Firmware

```

Enter Option >

Press a key from <1> to <9> or <A> to <C> (capital or small letters) to select the next action

Configure Enterprise Submenu

To enter into this submenu, you should press <1> from Main Menu. The following menu will be displayed:

```

ENTERPRISE CONFIGURATION
=====
1. Enterprise Name
2. Location
3. Contact
4. Phone
5. E-mail
0. Return to Main Menu

```

Press a key from <1> to <4> to configure one of the displayed items. Press <0> to return to previous (Main) menu. This information will appear in the body of emails received with alert messages.

Display Network Settings

To display network settings press <2> from Main Menu. The following text will be displayed (actual values from the right side may differ depending on your configuration):

```

NETWORK SETTINGS
=====

The unit uses a static IP Address

MAC Address:          00:40:9D:23:EA:E9
IP Address:           192.168.1.30
Subnet Mask:          255.255.255.0
Default Gateway:      192.168.1.1
DNS Server:           192.168.1.2
Alternate DNS Server: 0.0.0.0
HTTP Server Port:     80
SMTP Server:          smtp.somewhere.com
SMTP Port:            25
SMTP Server Authentication:disabled

Press any key to return to Main Menu

```

Hit a key to go back to Main Menu

Network Configuration Submenu

To enter into this submenu, <3> from Main Menu. The following submenu will be displayed:

```
NETWORK CONFIGURATION
=====
```

1. Change MAC Address
2. Toggle DHCP Mode
3. Change IP Address
4. Change Subnet Mask
5. Change Default Gateway
6. Change Preferred DNS Server
7. Change Alternate DNS Server
8. Change HTTP Server Port
9. Change SMTP Server
- A. Change SMTP Port
- B. Enable/Disable SMTP Authentication
- C. Change SMTP User Name
- D. Change SMTP Password
0. Return to Main Menu

Enter Option >

Hit a key from <1> to <8> or <A> to <D> to edit the corresponding variables or <0> to return back to Main Menu

Changing MAC Address

To change the MAC address, hit <1> from Network Configuration Menu.

```
Enter new MAC Address (00:40:9D:23:EA:E9):
```

The current MAC Address is displayed between parentheses. Type a new MAC address and hit <Enter> or just hit <Enter> to keep the current address unchanged. The display will return to Network Configuration submenu. When typing a new MAC Address, the <Backspace> key can be used to correct typing errors.

Toggle DHCP Mode

The system can use a manually assigned IP Address that will not change ("static"), or can get its IP Address from a DHCP server. When selecting to toggle the mode (by pressing <2>), the current mode will be displayed and the user will be asked if he wants to change. By pressing <y> or <Y>, the user will toggle the DHCP mode:

```
The unit uses a static IP Address.
Do you want to toggle the status? (y/n):
```

Pressing any other key will cancel the operation.

Changing IP Address

To change IP address, hit <3> from Network Configuration Menu.

```
Enter new IP Address (192.168.1.21):
```

The current IP Address is displayed between parentheses. Type a new IP address and hit <Enter> or just hit <Enter> to keep the current address unchanged. The display will return to Network Configuration submenu. When typing a new IP Address the <Backspace> key can be used to correct typing errors.

Changing Subnet Mask

To change subnet mask, hit <4> from Network Configuration Menu.

Enter new Subnet Mask (255.255.255.0):

The current subnet mask is displayed between parentheses. Type a new subnet mask and hit <Enter> or just hit <Enter> to keep the current mask unchanged. The display will return to Network Configuration Submenu. When typing new subnet mask the <Backspace> key can be used to correct typing errors.

Changing Default Gateway

To change default gateway address, hit <5> from Network Configuration Menu.

Enter new Default Gateway (192.168.1.1):

The current default gateway address is displayed between parentheses. Type a new address and hit <Enter> or just hit <Enter> to keep the current address unchanged. The display will return to Network Configuration Submenu. When typing a new gateway address the <Backspace> key can be used to correct typing errors.

Changing DNS Server Address

To change DNS Server address, hit <6> from Network Configuration Menu.

Enter new DNS Server (192.168.1.2):

The current DNS server address is displayed between parentheses. Type a new address and hit <Enter> or just hit <Enter> to keep the current address unchanged. The display will return to Network Configuration Submenu. When typing new DNS server address the <Backspace> key can be used to correct typing errors.

Changing Alternate DNS Server Address

To change Alternate DNS Server address, press <7> from Network Configuration Menu.

Enter new DNS Server (192.168.1.2):

The current Alternate DNS server address is displayed between parentheses. Type a new address and hit <Enter> or just hit <Enter> to keep the current address unchanged. The display will return to Network Configuration Submenu. When typing new alternate DNS server address the <Backspace> key can be used to correct typing errors.

Changing HTTP Server Port settings

To change the HTTP Server Port from the default port 80 to a secure port, press <8> from Network Configuration Menu.

Enter new HTTP Server Port (80):

The current HTTP server port assignment is displayed between parentheses. Type a new port number and hit <Enter> or just hit <Enter> to keep the current port number unchanged. The display will return to Network Configuration Submenu. When typing new HTTP port server number the <Backspace> key can be used to correct typing errors.

Changing SMTP server settings

SMTP Server is used to send e-mail notification to the configured users. The IP address of the server and port have to be configured before being able to use it. The default port for an SMTP server is 25. If your current SMTP server uses a port number other than the default, the ENVIROMUX should be configured accordingly.

To change SMTP Server address press <9> from Network Configuration Menu. The system will prompt for a name, displaying the old name between parentheses. If the operator introduces a valid server (which can be a numeric IP address or a literal) the system will save the new value into the permanent storage. The system does not check for the presence of the server or if the name can be resolved by the DNS. The operator has to assure that the server name introduced is operational, otherwise the e-mail messages will not be sent.

To change SMTP port, press **<A>** from Network Configuration Menu. The old port will be displayed between parentheses and the system will ask for a new value.

Most SMTP servers require authentication, i.e. the user connects to that server using a name and a password. To toggle between non-authenticated and authenticated mode, press **** (or ****) from Network Configuration Menu.

To change the user name, press **<C>** (or **<c>**) and to change the password, press **<D>** (or **<d>**). A maximum of 63 characters can be used for either the user name or password.

Change Password

To enter into this submenu, press **<4>** from Main Menu

A request to type the current password will be displayed. If a wrong password is entered, the user will be logged out from the Main Menu.

After introducing the correct current case-sensitive password, the user will be prompted to type and retype the new password. If they match and the length is smaller than 80 characters (alphanumeric) but larger than 5 characters, the password will be accepted and changed to the new one, otherwise the operation should be repeated.

Enable/Disable Telnet Server

This submenu allows the operator to disable or enable the Telnet server running on the system according to his needs. Press **<5>** from Main Menu. The following text will appear on the screen (example for a currently disabled telnet Server):

```
The Telnet Server is currently disabled
Press <Space> to enable it, other key to return
```

```
The setting will be effective after rebooting the unitÖ
```

After pressing **<Space Bar>** the setting will be changed and the system will show on the screen:

```
Telnet Server enabled!
Do you want to reboot now? (y/n)
```

The operator can choose to press **<Y>** and the system will reboot instantly or press **<N>** and continue to work. If **<N>** was pressed, the system will keep the old status until the first re-boot.

SNMP Agent Configuration Submenu

To enter this submenu, press **<6>** from main Menu. The following text will be displayed:

```
SNMP Agent Configuration
=====
0. Enable/Disable SNMP Agent
1. Enable/Disable SNMP Traps
2. Read Only Community String
3. Read-Write Community String
0. Return to Main Menu
```

Hit a key from **<1>** to **<4>** to configure the SNMP system, or **<0>** to return.

Enable/Disable SNMP Agent

The SNMP agent is used to monitor and control sensors and settings of the system from a remote station using SNMP (v1, v2) protocol. The SNMP agent can be disabled or enabled by the operator by pressing **<1>**. The system will display the current status of the SNMP agent and will ask the operator to press **<Space Bar>** to toggle the status. After saving the change, the system will ask the operator to press **<Y>** to reboot the system or **<N>** continue running. This change will become effective after the first re-boot.

Enable/Disable SNMP traps

The SNMP Traps are used as a method to send alerts or log messages over the network. They can be enabled/disabled by pressing <2> from this submenu, and then <Space Bar> to toggle the status.

Read-Only Community String

The SNMP Read-only community string enables a user to retrieve "read-only" information from the ENVIROMUX using the SNMP browser and MIB file. This string must be present in the ENVIROMUX and in the proper field in the SNMP browser.

Read-Write Community String

The SNMP Read-Write community string enables a user to read information from the ENVIROMUX and to modify settings on the ENVIROMUX using the SNMP browser and MIB file. This string must be present in the ENVIROMUX and in the proper field in the SNMP browser.

Configure Date & Time Submenu

To enter this submenu, press <7> from main Menu. The following text will be displayed:

```

      CONFIGURE DATE & TIME
      =====
1. Select Timer Source
2. Change Primary SNTP Address
3. Change Secondary SNTP Address
4. Change Current Time
5. Change Current Date
6. Set Time Zone
7. Display System Time
0. Return to Main Menu

```

Select Timer Source

To select a timer source, press <1> from Configure Date & Time Menu. The user will be informed of the current timer setting (internal or network time server), and prompted to change to the other type. Pressing <Y> will toggle to the other timer source. Pressing <N> will keep the current setting.

The unit uses internal timer

Do you want to synchronize with a network time server? [Y/N]:

Change Primary SNTP Address

To change SNTP address, press <2> from Configure Date & Time Menu. The current address is shown in parentheses. Typing in the new address and pressing <ENTER> will change the address.

Enter Primary SNTP server address (192.168.3.1):

Change Secondary SNTP Address

To change secondary SNTP address, press <3> from Configure Date & Time Menu. The current address is shown in parentheses. Typing in the new address and pressing <ENTER> will change the address.

Enter Secondary SNTP server address (192.168.3.1):

Change Current Time

To change the time, press <4> from Configure Date & Time Menu.

Manually change time (Friday, 07-21-2006 11:38:49) HH:MM:SS [A|P]:

Example: 01:00:00 P will specify 1:00 P.M. If the A or P is omitted, the display will be in military format and the entry assumed to be A.M. (1:00 p.m. in military format is 13:00:00).

Change Current Date

To change the date, press <5> from Configure Date & Time Menu.

Manually change date (Friday, 07-21-2006 11:39:19) MM-DD-YYYY:

Set Time Zone

To select a time zone, press <7> from Configure Date & Time Menu. The following screen will appear:

```

0-(GMT-12:00) Eniwetok, Kwajalein
1-(GMT-11:00) Midway Island, Samoa
2-(GMT-10:00) Hawaii
3-(GMT-09:00) Alaska
4-(GMT-08:00) Pacific Time (US & Canada); Tijuana
5-(GMT-07:00) Mountain Time (US & Canada)
6-(GMT-07:00) Arizona
7-(GMT-06:00) Central Time (US & Canada)
8-(GMT-06:00) Saskatchewan
9-(GMT-06:00) Mexico City
10-(GMT-06:00) Central America
11-(GMT-05:00) Eastern Time (US & Canada)
12-(GMT-05:00) Indiana (East)
13-(GMT-05:00) Bogota, Lima, Quito
14-(GMT-04:00) Atlantic Time (Canada)
15-(GMT-04:00) Caracas, La Paz
16-(GMT-04:00) Santiago
17-(GMT-03:30) Newfoundland
18-(GMT-03:00) Brasilia
19-(GMT-03:00) Buenos Aires, Georgetown
N-next          X-eXit
Current Time Zone [11(GMT-05:00) Eastern Time (US & Canada)]
Select zone [nn]:

```

The user can press <N> for next screen, <P> for previous screen, or <X> for exit, followed by <ENTER> to navigate between the screens or go back to the Configure Date & Time Menu. Typing the number next to the corresponding time zone followed by pressing <ENTER> will set the current time zone to the one chosen.

Display System Time

To display the current system date and time, press <8> from Configure Date & Time Menu.

Current time is: Friday, 07-21-2006 15:57:16 (notice this is displayed in military format)

Monitoring Submenu

Monitoring Submenu allows the user to view the current status of all Sensors, Digital Inputs, Output Relays or IP Devices, as well as to change the status of Control Outputs. To enter this submenu, press <8> from Main Menu. The following Submenu will be displayed:

```

MONITORING
=====
1. Power Supply
2. Internal Sensors
3. External Sensors
4. Digital Inputs
5. Output Relays
6. Command Output Relays
7. IP Devices
0. Return to Main Menu

```

Power Supply

To view the power supply status, press <1> at the Monitoring Menu. A status screen will appear. Pressing any key will return the user to the Monitoring Menu.

```

Power Supply Status
DESCRIPTION      VALUE      STATUS
-----
Main Power Supply  OK        Normal

```

Press any key to continue

Internal Sensors

To view the internal sensors, press <2> at the Monitoring Menu. A status screen will appear. Pressing any key will return the user to the Monitoring Menu.

```

Sensors Status:
TYPE      DESCRIPTION      VALUE      STATUS
-----
Temperature  Internal Temperature    40.5      Alert
-----
Humidity     Internal Humidity       40.5      Normal
-----
Power        Internal Power          40.5      Normal
-----

```

Press any key to continue

External Sensors

To view the external sensor status screen, press <3> at the Monitoring Menu. The display shows the type, description, value, and status of each sensor. Pressing any key will return the user to the Monitoring Menu. (View below is what will be seen with no sensors connected.)

```

Sensors Status:
TYPE      DESCRIPTION      VALUE      STATUS
-----

```

Press any key to continue

Digital Inputs

To view any digital input status screen, press <4> at the Monitoring Menu. The status screen contains a description, value, and status for each input. Pressing any key will return the user to the Monitoring Menu. (View below is what will be seen with no sensors connected.)

```
Digital Inputs Status
DESCRIPTION          VALUE          STATUS
-----
Press any key to continue
```

Output Relays

To view the output relay status screen, press <5> at the Monitoring Menu. The display shows the description of each relay, as well as its value. Pressing any key will return the user to the Monitoring Menu.

```
Outputs Relays Status
DESCRIPTION          VALUE
-----
Output Relay #1      Closed
-----
Output Relay #2      Closed
-----
Output Relay #3      Closed
-----
Output Relay #4      Closed
-----
Press any key to continue
```

Command Output Relays

To change the output relay status, press <6> at the Monitoring Menu. The display shows the description of each relay, as well as its value. Typing <X> for exit, followed by <ENTER> will return the user to the Monitoring Menu.

```
Outputs Relays Status
#  DESCRIPTION          VALUE
-----
1  Output Relay #1      Closed
-----
2  Output Relay #2      Closed
-----
3  Output Relay #3      Closed
-----
4  Output Relay #4      Closed
-----
Press number of Output Relay to change, or 'X' to exit
Enter Option >
```

Typing the number of a relay and pressing <ENTER> will allow the user to change the value of the relay from Closed to Open, as shown below.

```
0-Open      1-Closed
Enter new value >
```

IP Devices

To view the IP device status screen, press <7> at the Monitoring Menu. The screen shows the description, value, and status of each device. Pressing any key will return the user to the Monitoring Menu.

```
IP Devices Status
DESCRIPTION          VALUE          STATUS
-----
```

Press any key to continue

Restore Settings to Defaults

To restore all settings in the ENVIROMUX to default settings, press <9> from the Main Menu. All user programmed settings will be lost and restored back to factory default settings.

Reboot

To reboot the ENVIROMUX, press <A> from the Main Menu. A prompt will appear asking if you are sure you want to continue. Press <Y>. The ENVIROMUX will reboot and the user will need to login again to restore the connection after approximately 5 seconds.

Logout and Exit

It is important that the user logout of the RS232 or Telnet menu when finished. There is no automatic logout in this program, so unless the user logs out, anyone can use this connection as long as it is left open.

To logout and exit the ENVIROMUX, press from the Main Menu. A message will immediately appear:

Connection closed...

Press <Enter> to reconnect.

Upgrade Firmware

Note: To upgrade the Firmware, a LAN connection is required, either directly using a crossover cable (specs on page 67), or through the Ethernet (page 11).

1. To upgrade the Firmware, press <C> from Main Menu (see page 48). A prompt will appear asking if you are sure you want to continue. Press <Y>.

Note: Take note of the Firmware version currently in place (shown in Fig. 53 as V1.1) for reference after this procedure.

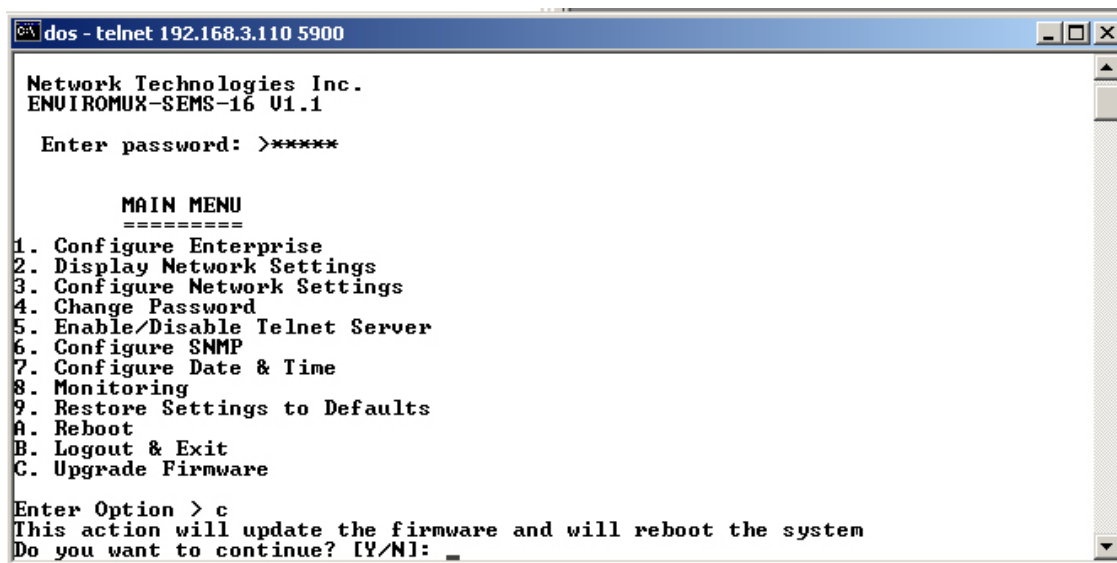


Figure 53- Telnet Main Menu

2. The window should now display the following text, indicating that the board is ready to receive new Firmware.

```
Please, wait...  
RAM based FTP Server ready.
```

3. From a computer connected through the LAN (this could be the same computer, connected at the “Console” port and to the LAN) , open a DOS command window and type the following:

Note: If this is being done through Telnet, simply open a second command window.

```
C:\>FTP [ENVIROMUX IP address] (ex: default IP is 192.168.1.21)
```

4. The following prompt will appear;

```
220 NET+OS 6.3 FTP server ready.  
User (192.168.3.83:(none)):
```

Press <Enter>

5. At the “ftp>” prompt, type “bin” and press <Enter>

```
ftp>bin
```

The following will display:

```
200 Type set to I.  
ftp>
```

6. Enter the following command:

```
C:\>put C:\<file_path>\<firmwarefilename>.bin
```

where file_path is the location of the firmware file. The press <Enter>.

7. When the transfer has started, the following message will appear:

```
200 PORT command Ok.  
150 About to open data connection.
```

8. When the transfer is complete (should take approximately 30 seconds depending on the connection speed), the following message will appear:

```
226 Transfer complete  
ftp: 914628 bytes sent in 28.16Seconds 32.48Kbytes/sec.  
ftp>
```

9. When the transfer is completed, type “quit” and press the <Enter> key to exit the ftp program.

```
C:\>quit
```

10. The HyperTerminal window in the connected terminal will now display the following text:

```
FTP: Flash download complete.  
Resetting system in 3 seconds.
```


ENVIROMUX will restart with the new Firmware. Press <Enter> to reconnect to ENVIROMUX.

The following text (or something similar) will appear:

```
Network Technologies Inc.  
ENVIROMUX-SEMS-16 V1.2
```

If the upgraded firmware is different than the firmware that was originally in place, the version number will change to confirm it. (Shown above as "V1.2".)

ENVIROMUX is now ready to use.

FRONT PANEL LED INDICATORS

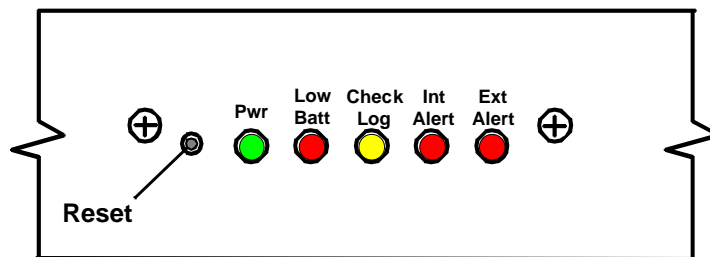


Figure 54- Front panel LED indicators

Front Panel LED Status Chart

LED Label	Status	Meaning
Pwr	OFF	No Power
	Solid ON	AC Power is ON
	Blinking slowly (once /second)	AC Power has failed, Battery backup (pg. 60) is ON (The LED will not blink if the unit is powered OFF by the switch.)
	Blinking rapidly	Discovery Tool (pg. 17) is in use and communicating with the ENVIROMUX
Low Batt	OFF	Battery is OK, AC power is ON
	Solid ON	Battery is below 12V and charging (no action required)
	Blinking	Battery has been disconnected (battery is below 10.7V), requires attention, contact NTI
Check Log	OFF	No new messages in Data Log since last viewing
	ON	New message in Data Log-not an alert
Int Alert	OFF	No new alert message in Event Log re: internal sensors
	ON	New alert message in Event Log re: internal sensors
Ext Alert	OFF	No new alert message in Event Log re: external sensors
	ON	New alert message in Event Log re: external sensors

System Reset Button

A reset button is located on the front of the ENVIROMUX-SEMS-16 (see Fig. 54). The button can be used to reboot/restart the firmware of the ENVIROMUX. Pressing this button supersedes the use of the power on/off switch and battery backup to allow the firmware to easily reboot in the event of a system lockup. To activate a reset, momentarily press the button with a pen or other small pointed object. The ENVIROMUX will reboot and be ready for login within its usual start-up time period.

BATTERY BACKUP

ENVIROMUX has a rechargeable sealed lead-acid battery backup that will prevent the monitoring system from shutting down in the event of a power failure. Should a service power failure occur, **the ENVIROMUX will continue to operate as normal for 1 hour under full load** and approximately 30 minutes after the "Low Batt" LED on the front panel (page 53) illuminates.

When the battery is not being used, it is being charged as long as line power is provided. It will take 32 hours for the battery to fully charge from a fully discharged state. While charging the "Low Batt" LED will be solid ON.

If the power is ON and the battery is fully charged, the "Low Batt" LED will be dark.

If the battery fails to charge or if the battery's output voltage drops from 12VDC to below 10.7 volts, the "Low Batt" LED will blink. The battery will automatically be disconnected from the system. If this happens, the battery must be replaced. Contact NTI to arrange for return and service.

Note: If the power switch is turned OFF while still plugged into line power, the ENVIROMUX will sense this and not engage the backup battery.



CAUTION

RISK OF ELECTRIC SHOCK. Do not remove cover. No user serviceable components inside. All repairs and maintenance must be performed by authorized service personnel only.

ENVIROMUX-SEMS-16 SPECIFICATIONS

Front Panel Interface

LEDs	Green – Power, Solid for Main power, flashing for Backup power
.....	Red – Low Bat (solid for charging battery, blinking for fault)
.....	Yellow – Check Log
.....	Red – Internal Sensor Alert
.....	Red – External Sensor Alert

RJ45 Sensor Inputs

Connector	RJ45 connector
Voltage Supply	5VDC and 12VDC
Max. Current Supply	50mA
Signal Type	RS485 for RS485 sensors; 2-wire for contact sensors
Max. Cable Length	1000 FT
ESD Protection	IEC 61000-4-2
Fuse Protection	Resetable poly fuse – 500mA hold, 1A trip; 15VDC max. One fuse shared by 8 ports.

Digital Inputs

Connector	Detachable terminal block-plug-in, 8 x 2 contacts
Wire Range	16-26 AWG
Max. Input Voltage	25VDC
Max. Contact Resistance	1K Ohm
Auxiliary Voltage Supply	12VDC +/-10%
Max. Current Supply	50 mA (terminals 1-7) 650mA (terminal 8 <u>only</u>)
ESD Protection	IEC 61000-4-2
Fuse Protection	Resetable poly fuse – 200mA hold, 400mA trip; 16VDC max. One fuse shared by 2 ports

Output Relays

Connector	Detachable terminal block-plug-in, 4 x 2 contacts
Wire Range	16-26 AWG
Output Type	Dry contact, relay isolated
Output Rating	1A / 30 VDC, 0.5A / 100VAC
Normal Contact State	N.O.
Contact Resistance	20mΩ
ESD Protection	No, Relay Isolated.
Fuse Protection	No, Relay Isolated.

Warning: The digital output contacts are not to be connected directly to AC mains wiring.

Beacon Port & Siren Port

Connector	Detachable terminal block-plug-in, 1x2 contacts
Wire Range	14-22 AWG
Voltage Output	12VDC +/-10%
Current Output	180mA
ESD Protection	IEC 61000-4-2,
Fuse Protection	Resetable poly fuse – 200mA hold, 400mA trip; 16VDC max.

Expansion Ports

Connector	RJ45
Signal Type	I2C
Max Number of Daisy Chained Units	4
ESD Protection	IEC 61000-4-2

Control Serial Port

Connector	DB9 Female
Supported Signals	TXD, RXD, RTS, CTS, DTR, DSR
Baud Rate	max 115,200 bps
Data Format	8 bits
Parity	odd, even or no parity
Stop Bits	1, 2 stop bits
ESD Protection	IEC1000-4-2

Auxiliary Serial Port

Connector	DB9 Male
Supported Signals	TXD, RXD, RTS, CTS, DTR, DSR, DCD, RI
Baud Rate	max 115,200 bps
Data Format	8 bits
Parity	no parity
Stop Bits	1 stop bits
ESD Protection	IEC1000-4-2

Auxiliary Power Port

Connector	Detachable terminal block-plug-in, 1x2 contacts
Wire Range	14-22 AWG
Voltage Output	12VDC+/-10%
Current Output	150mA
ESD Protection	IEC 61000-4-2
Fuse Protection	Resettable poly fuse – 200mA hold, 400mA trip; 30VDC max.

Ethernet Port

Connector	RJ45-socket
Connection Speed	10/100 Base-T
Security	SSL
Supported Protocols	http, https, Telnet

Back-Up Battery

Type	Rechargeable Sealed Lead-Acid Battery
Voltage, Current Rating	12VDC, 2.9Ahrs
Battery Operational Time	1 hr, fully loaded; 30 min. after 'Low Bat' LED illuminates
Battery Charging Time	32 hrs (from fully discharged to fully charged).
Replaceable	Yes – can be replaced by authorized personnel only (NTI)

General Specifications

Power Input	110/220VAC, 50 – 60 Hz, 45W
Operating Temperature	32° -104°F (0-40°C)
Operating Humidity	17-90%RH, non-condensing
MTBF	56,708 hours
Enclosure Size	1 RU metal enclosure (19" x 9.5" x 1.75")

TCP/IP

Supported Browsers	IE, Netscape, Mozilla, Opera
Network Configuration	Allows Static or Dynamic IP Configuration
Max Number of Email Addresses	17; 1 per User Account + 1 for Administrator

SENSOR SPECIFICATIONS

Internal Temperature Sensor

Temperature Range 32° to 104° F (0° to 40° C)

Temperature Accuracy +/- 2° F (+/- 1° C)

Internal Humidity Sensor

Humidity Range 20% to 80% RH at temperatures between 0° to 40° C

Humidity Accuracy +/- 5 % RH

Internal Power Sensor

Measurable Mains Voltage 0 – 255VAC

Low Battery Voltage 10.7V

External Temperature Sensor

NTI Model # ENVIROMUX-ST5

Connector RJ45 connector

Temperature Range 32° to 122° F (0° to 50° C)

Temperature Accuracy +/- 2° F (+/- 1° C)

Voltage Supply 5V DC

Current Consumption 20mA

Max. Cable Length 1000 ft

Communication Type RS485

Data rate 96kbps

External Humidity Sensor

NTI Model # ENVIROMUX-SHS

Connector RJ45 connector

Humidity Range 20% to 80% RH at temperatures between 0° to 40° C

Humidity Accuracy +/- 5 % RH

Voltage Supply 5V DC

Current Consumption 20mA

Max. Cable Length 1000 ft

Communication Type RS485

Data rate 96kbps

External Temperature and Humidity Sensor

NTI Model # ENVIROMUX-STHS

Connector RJ45 connector

Temperature Range 32° to 122° F (0° to 50° C)

Temperature Accuracy +/- 2° F (+/- 1° C)

Humidity Range 20% to 80% RH at temperatures between 0° to 50° C

Humidity Accuracy +/- 5 % RH

Voltage Supply 5V DC

Current Consumption 20mA

Max. Cable Length 1000 ft

Communication Type RS485

Data rate 96kbps

Liquid Detection Sensor

NTI Model #.....	ENVIROMUX-LDS
Connector	RJ45 connector
Minimum Liquid depth	0.1"
Detectable Liquids	All except de-ionized water; all conductive liquids
Voltage Supply.....	12V DC
Current Consumption.....	20mA
Max. Cable Length.....	1000 ft
Minimum puddle	0.6" diameter, 0.1" depth
Communication Type	Contact, 2-wire

Smoke Sensor

NTI Model #.....	ENVIROMUX-SDS
Connector	Screw Terminal
Voltage Supply.....	8 - 35V DC
Current Consumption.....	200uA
Alarm Output.....	Relay (NO)
Max. Cable Length.....	1000 ft

Vibration Sensor

NTI Model #.....	ENVIROMUX-VSS
Connector	Screw Terminal
Alarm Output.....	NO
Max. Cable Length.....	1000 ft

Motion Sensor

NTI Model #.....	ENVIROMUX-IMD-CM (Ceiling Mount)
.....	ENVIROMUX-IMD (General Model)
.....	ENVIROMUX-IMD-MW (Miniature)
Connector	Screw Terminal
Voltage Supply.....	8 - 16V DC
Current Consumption.....	15mA
Alarm Output.....	Relay (NC), 10 ohm in-line resistor, 28VDC/100mA
Tamper Switch.....	NC dry contact, 10 ohm in-line resistor, 28VDC/50mA
Max. Cable Length.....	1000 ft
Operating Temperature.....	-10°C to 55°C
Humidity.....	95%, Non-Condensing

Glass Break Sensor

NTI Model #.....	ENVIROMUX-GBS
Connector	Screw Terminal
Voltage Supply.....	9 - 16V DC
Current Consumption.....	35mA
Alarm Output.....	Form A relay (NC or NO), 1A/24VDC
Alarm Duration.....	3 seconds
Max. Cable Length.....	1000 ft

Door Contact Sensor

NTI Model #..... ENVIROMUX-M-DCS
 Connector..... Screw Terminal
 Alarm Output..... Magnetic Sensor; 35VDC/100mA
 Max. Cable Length..... 1000 ft

ACCESSORY SPECIFICATIONS

Digital Keypad

NTI Model #..... ENVIROMUX-ACK
 Connector..... Screw Terminal
 Voltage Supply..... 12-24VDC
 Current Consumption..... 100mA
 Alarm Output 1..... NC or NO dry contact, 30VDC/5A
 Alarm Output 2..... NC or NO dry contact, 30VDC/1A
 Duress..... NPN Open Collector; Active Low; 24VDC / 100mA
 Tamper Switch..... NC dry contact, 50mA/24VDC
 Max. Cable Length..... 1000 ft

Key Station

NTI Model #..... ENVIROMUX-RKS
 Connector..... Screw Terminal
 Voltage Supply..... 12VDC
 Current Consumption..... 12mA
 Alarm Output..... N.O. Contact, 3A; Momentary
 Tamper Switch..... NC dry contact, 12VDC/50mA
 Max. Cable Length..... 1000 ft

Electric Strike

NTI Model #..... ENVIROMUX-EDR-SF (Locked w/ Power ON)
 ENVIROMUX-EDR-SCR (Locked w/ Power OFF)
 Connector..... Screw Terminal
 Voltage Supply..... 12VDC
 Current Consumption..... 450mA- SCR ; 200mA- SF
 Max. Cable Length..... 1000 ft

NOTE: The Electric Strike should be connected to DIGITAL IN terminal 8 for power.

Alarm Beacon

NTI Model #..... ENVIROMUX-BCN-R
 Connector..... Screw Terminal
 Voltage Supply..... 12VDC
 Current Consumption..... 180mA
 Alarm Output..... 60~80 Flashes per minute
 Max. Cable Length..... 100 ft

Siren

NTI Model #.....	ENVIROMUX-SRN-M
Connector	Screw Terminal
Voltage Supply.....	12VDC
Current Consumption.....	130mA
Alarm Output.....	108dB
Max. Cable Length.....	100 ft

Panic / Emergency Button

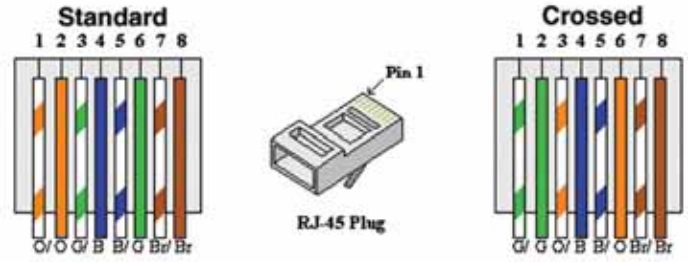
NTI Model #.....	ENVIROMUX-EBS
Connector	Screw Terminal
Alarm Output.....	Contact: NC or NO
Max. Cable Length.....	1000 ft

WIRING METHODS

PC-to ENVIROMUX Crossover Cable

In order to make a direct connection between a PC and the ETHERNET connector of the ENVIROMUX-SEMS, a crossover cable must be used. The cable is made with CAT5 cable terminated with RJ45 connectors and wired according to the chart below.

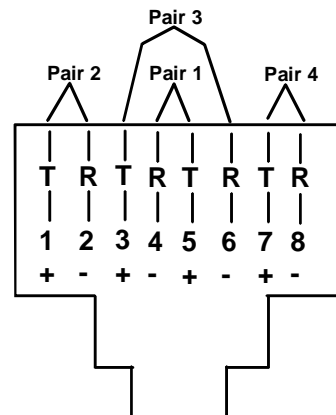
Pin assignment at Standard End	Wire Color	Pin assignment at Crossed End
1	White/Orange	3
2	Orange	6
3	White/Green	1
4	Blue	4
5	White/Blue	5
6	Green	2
7	White/Brown	7
8	Brown	8



RS485 Sensor Cable

The CAT5 connection cable between the ENVIROMUX and the external RS485 Sensors (page 8) is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568 B industry standard. Wiring is as per the table and drawing below.

Pin	Wire Color	Pair
1	White/Orange	2
2	Orange	2
3	White/Green	3
4	Blue	1
5	White/Blue	1
6	Green	3
7	White/Brown	4
8	Brown	4



(View Looking into RJ45 Socket)

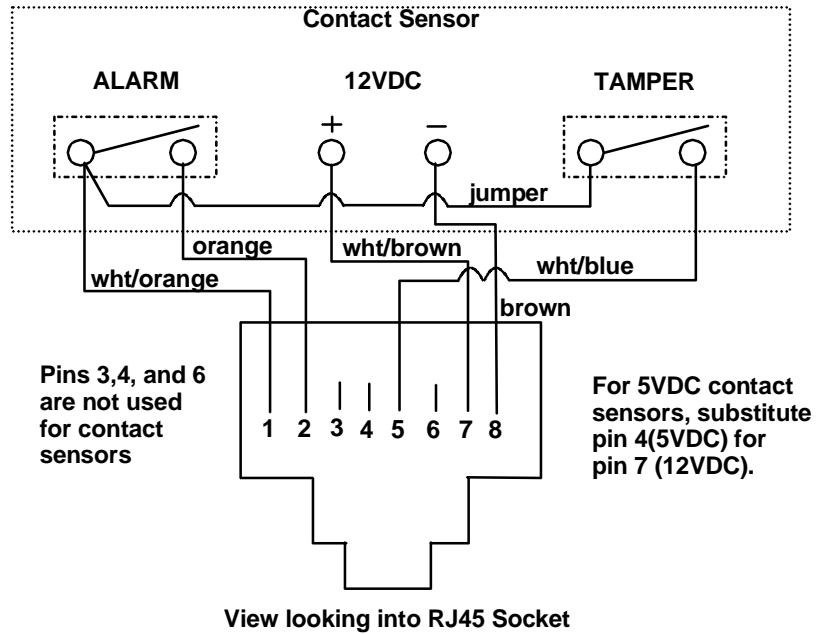
Contact Sensor Wiring

When applying CAT5 cables to contact sensors for plug-in to the RJ45 Sensor sockets, the following socket-to-sensor wiring must be followed:

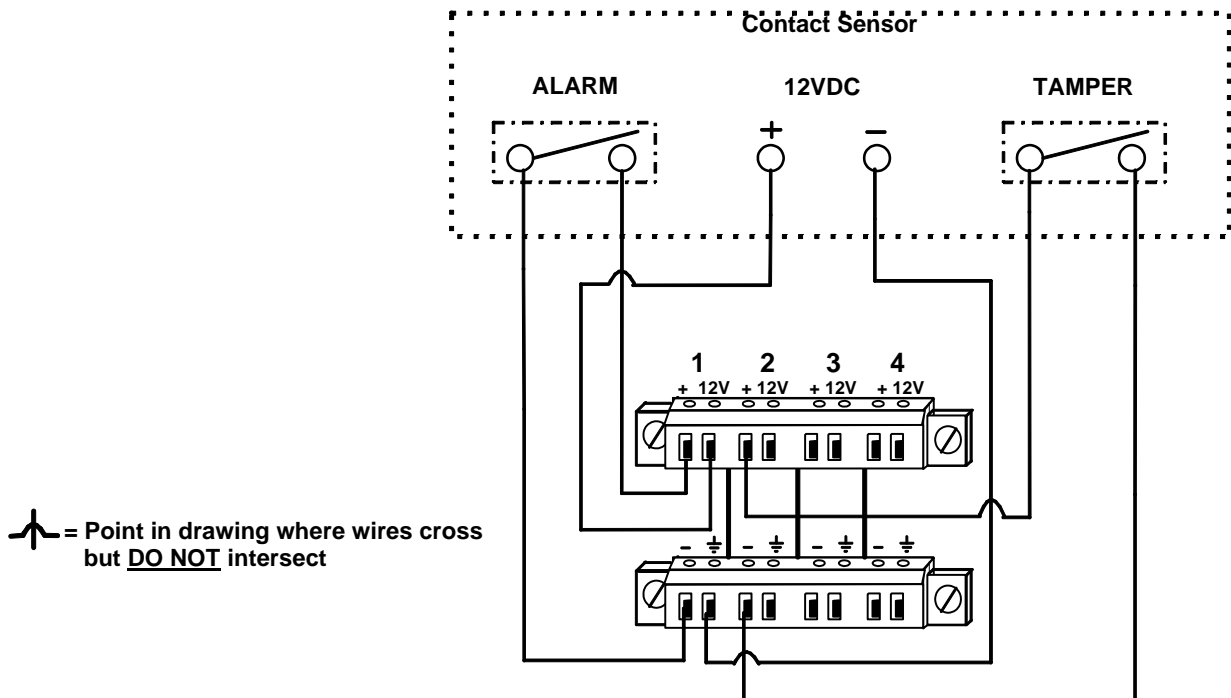
RJ45 Sensor Socket Pinout

Pin #	Pin Name
1	GND
2	SENSE
3	RS485 +
4	+5 VDC
5	TAMPER SWITCH
6	RS485 -
7	+12 VDC
8	GND

Schematic for wiring Contact Sensor to RJ45 Socket



Schematic for wiring Contact Sensor to DIGITAL IN Terminals

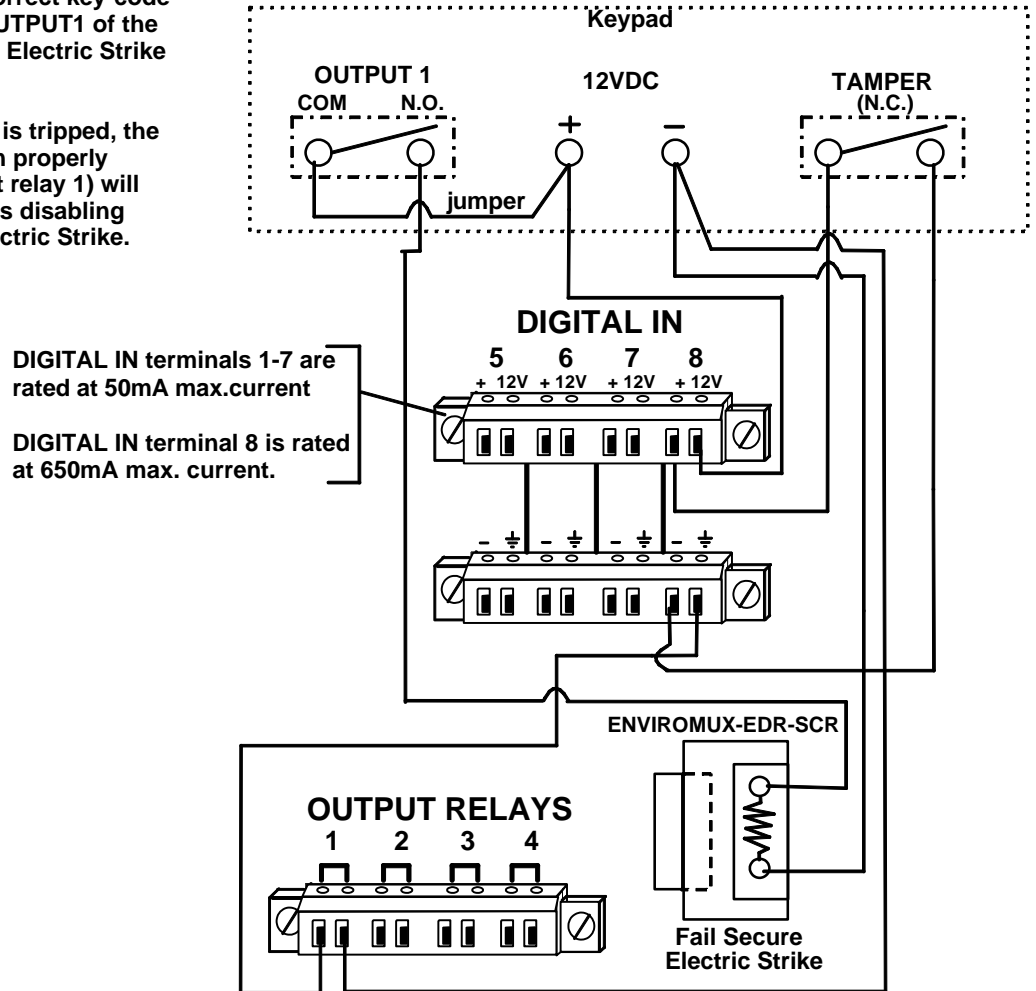


Other wiring examples

In this example, when the correct key-code is entered at the keypad, OUTPUT1 of the keypad will apply 12V to the Electric Strike to activate it.

If the keypad tamper switch is tripped, the ENVIROMUX software (when properly configured to control output relay 1) will break the ground circuit thus disabling both the keypad and the Electric Strike.

Schematic for wiring Keypad to Digital In Terminals



⚡ = Point in drawing where wires cross but DO NOT intersect

DIGITAL IN 1 is set to open OUTPUT RELAY 1 when it receives a signal (circuit open when tampered with) OUTPUT RELAY 1 is set to a N.C. state.

Electric Strike (ENVIROMUX-EDR-SCR or ENVIROMUX-EDR-SF) must be connected to DIGITAL IN 8.

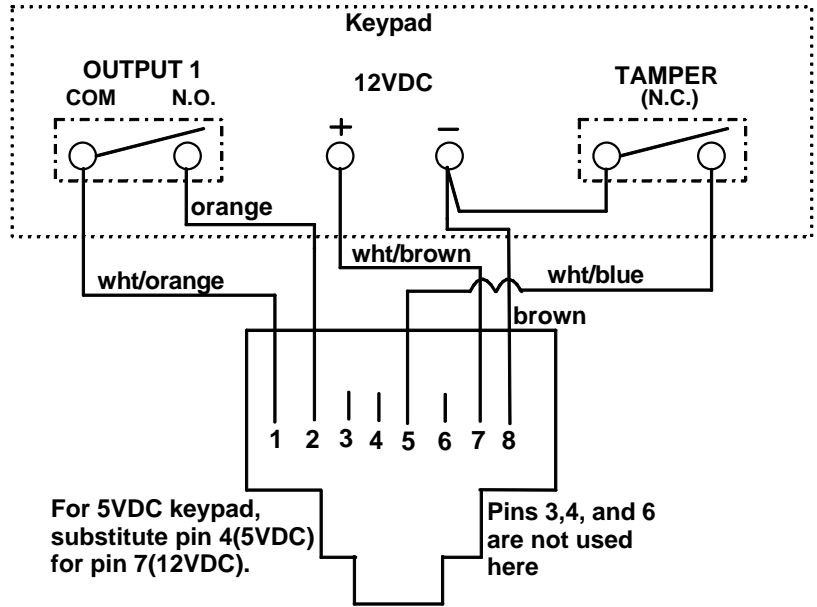
Schematic for wiring Keypad to RJ45 Socket

In this example, the keypad is powered by ENVIROMUX and the tamper switch will break the circuit to the electric strike if opened.

Through the ENVIROMUX firmware, the closure of OUTPUT 1 on the keypad will cause an alert message and can close the OUTPUT RELAY 1 normally open switch, powering the electric strike.

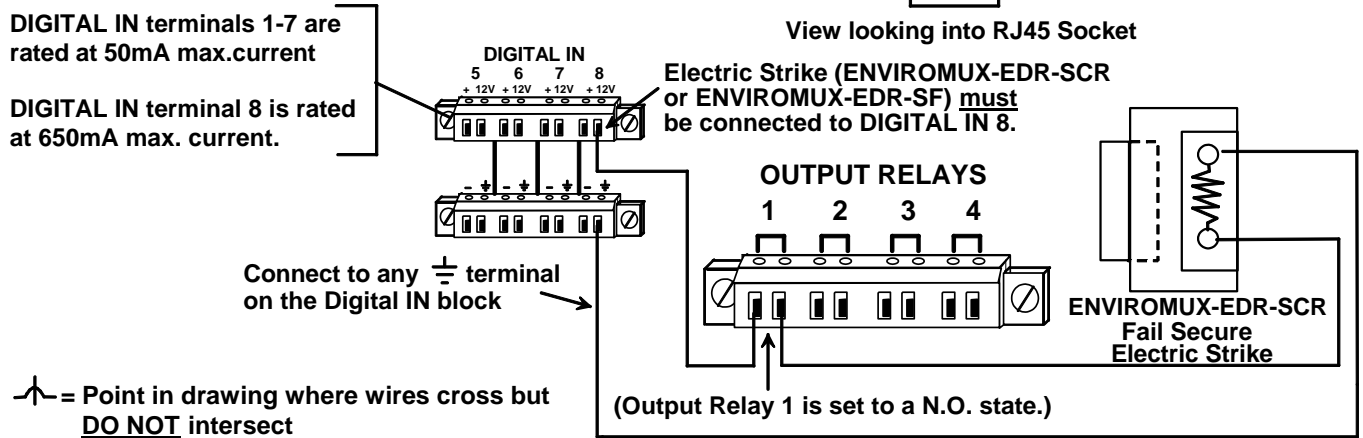
On the sensor configuration page, the tamper can be configured to block the closure of OUTPUT RELAY 1.

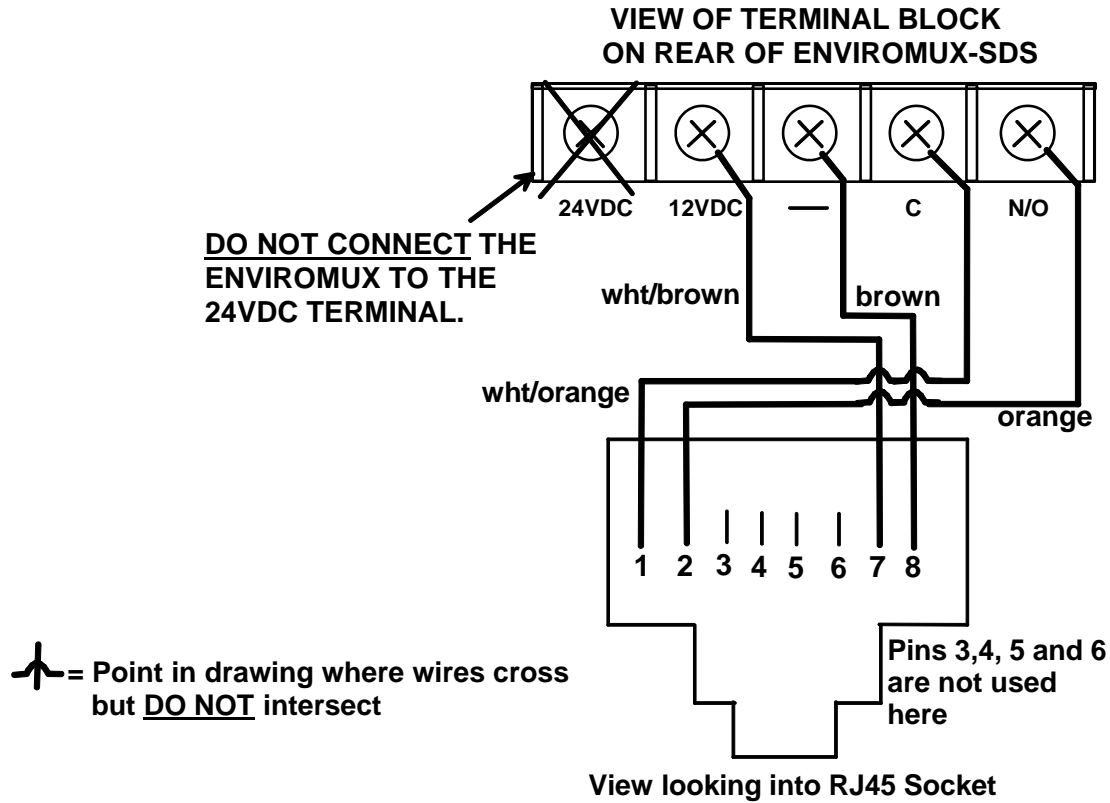
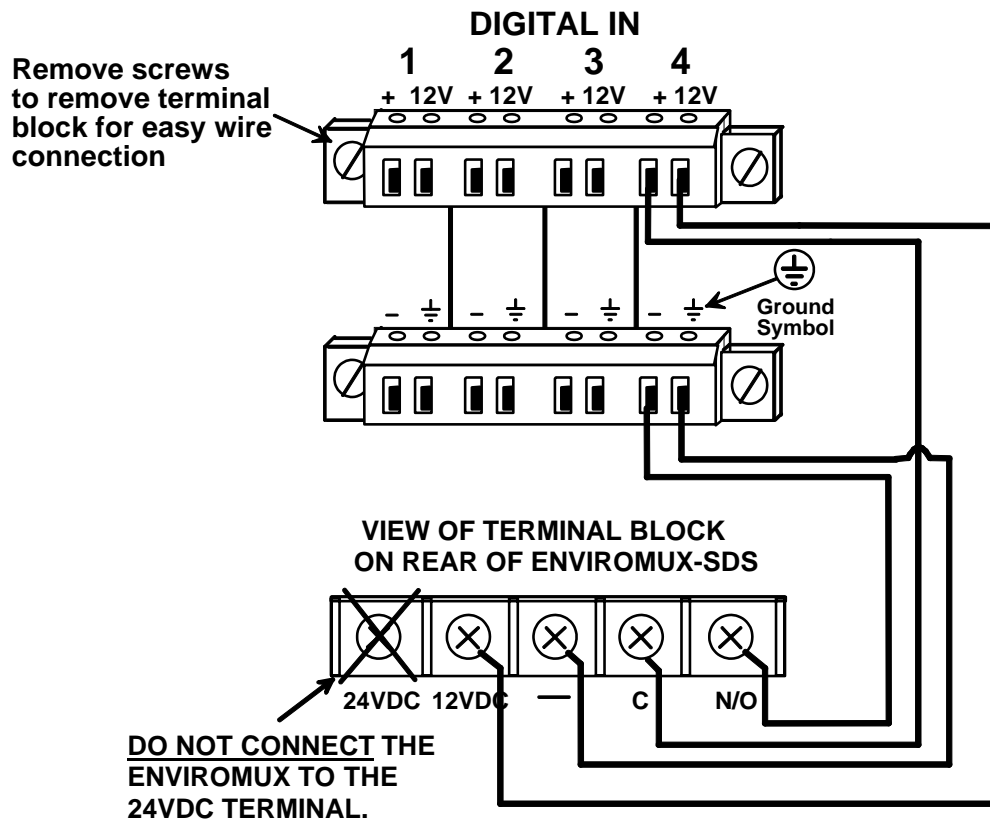
Note: Up to two keypads may be connected to the RJ45 sensor ports provided only 1 is connected per row of ports. (i.e. one keypad may be connected to any port 1-8, and one may be connected to any port 9-16).



DIGITAL IN terminals 1-7 are rated at 50mA max.current

DIGITAL IN terminal 8 is rated at 650mA max. current.



Example for wiring Smoke Detector to RJ45 Socket**Example for wiring Smoke Detector to Digital In Terminals**

Example for wiring ENVIROMUX-PWR-RLY-15A to ENVIROMUX-SEMS16

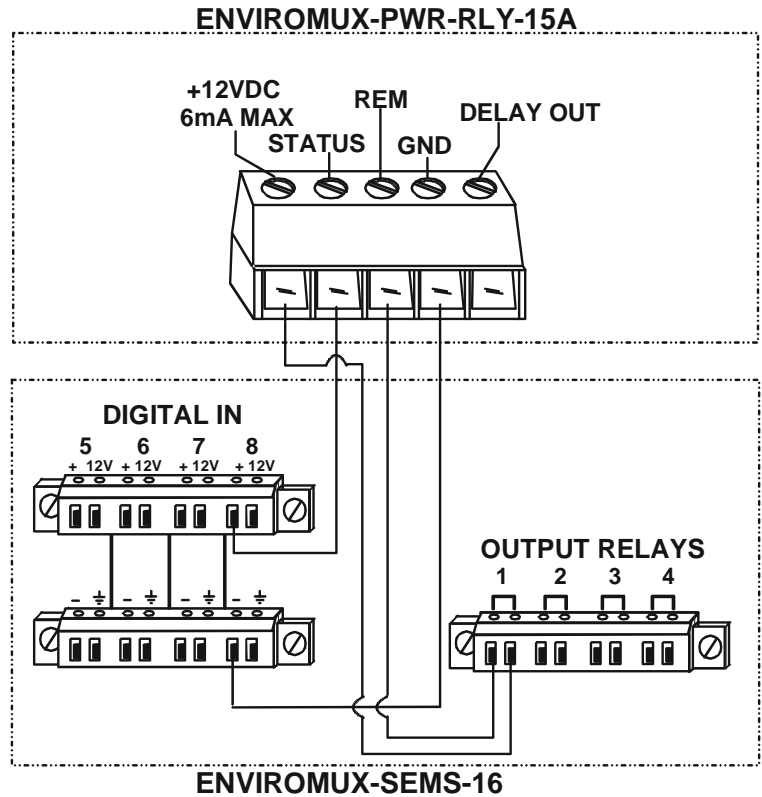
In this wiring example, closing Output Relay 1 on the ENVIROMUX-SEMS-16 will power OFF the output of the AC power relay.

Configure ENVIROMUX-SEMS-16 such that:

When the digital input 8 is open, this will indicate the ENVIROMUX-PWR-RLY output is ON

When the digital input 8 is closed, this will indicate the ENVIROMUX-PWR-RLY output is OFF

—/— = Point in drawing where wires cross but **DO NOT** intersect



TROUBLESHOOTING

Each and every piece of every product produced by Network Technologies Inc is 100% tested to exacting specifications. We make every effort to insure trouble-free installation and operation of our products. If problems are experienced while installing this product, please look over the troubleshooting chart below to see if perhaps we can answer any questions that arise. If the answer is not found in the chart, please check the FAQs (Frequently Asked Questions) at our website at <http://www.networktechinc.com> or contact us directly for help at 1-800-742-8324 (800-RGB-TECH) in US & Canada or 1-330-562-7070 worldwide. We will be happy to assist in any way we can.

Problem	Cause	Solution
"Pwr" LED is blinking	<ul style="list-style-type: none"> Blinking 1/sec =Power is OFF, battery backup is powering the ENVIROMUX Blinking rapidly= discovery tool in use 	<ul style="list-style-type: none"> Restore AC power to the ENVIROMUX Nothing wrong- close Discovery Tool to stop
Cannot access ENVIROMUX through my browser	<ul style="list-style-type: none"> Browser not supported Trying to connect to wrong IP address User not authorized 	<ul style="list-style-type: none"> See supported browsers on page 5 Type correct IP address into browser URL field. If IP address is unknown, use Discovery Tool (page 17) to identify it. See administrator for user name and password
Cannot access ENVIROMUX user interface with direct Ethernet connection	<ul style="list-style-type: none"> Telnet not enabled Cable not wired correctly 	<ul style="list-style-type: none"> Must enable Telnet through serial menu (page 51) For direct connection via Ethernet port, use a crossover cable (see page 67)
ENVIROMUX will not recognize sensor	Previously used sensor port was never cleared from memory upon removal	Click on "???" in summary page, click on "Configure" button, click on "Remove" at bottom of Configure page to remove and clear the port. (see page 23)
Device Discovery tool will not work	Java not installed	Download and install Java (see page 17)
Not receiving e-mail alert messages	<ul style="list-style-type: none"> Ethernet cable disconnected Wrong or no IP address provided for SMTP server User does not have user profile correctly configured 	<ul style="list-style-type: none"> Check Ethernet cable connections Check all Network Settings (page 32) Check user profile. Make sure groups have been selected and the contact settings are correct (see page 36)
Beacon not illuminating	<ul style="list-style-type: none"> * Wires are not connected properly * Beacon in use is improperly rated * Sensor is not configured to power ON beacon 	<ul style="list-style-type: none"> * Check wire connections * Make sure Beacon is rated at 12VDC, 180mA or less * Check sensor configuration- make sure Beacon is selected under "Alert Notifications"
Siren not making noise	<ul style="list-style-type: none"> * Wires are not connected properly * Siren in use is improperly rated * Sensor is not configured to power ON siren 	<ul style="list-style-type: none"> * Check wire connections * Make sure Siren is rated at 12VDC, 180mA or less * Check sensor configuration- make sure Siren is selected under "Alert Notifications"
The sensor page does not display the current readings	Java scripts cannot be displayed-java not enabled in browser	Enable the Java Scripts and Java in the browser
Sensors connected to RJ45 Sensor ports stop working	Sensors applied collectively exceed current rating of row (1-8, 9-16). Fuse protecting ports has opened.	Disconnect sensors. After approx. 10 minutes fuse inside ENVIROMUX should reset. Make sure load of all 8 sensors per row does not exceed 500 mA. (i.e. only one keypad per row (row 1 = ports 1-8, row 2= ports 9-16))

Sensor connected to DIGITAL IN terminal stops working	Sensor is rated for more current than terminal can supply. Fuse protecting port has opened. ENVIROMUX-EDR-SF and ENVIROMUX-EDR-SCR Electric Strike may cause this if connected to DIGITAL IN terminals 1-7	Disconnect failed sensor. After approx. 10 minutes internal fuse should reset. Reconnect sensor to terminals provided sensor current requirements fall within terminal limitations. DIGITAL IN terminals 1-7 max. load = 50mA DIGITAL IN terminal 8 max. load = 650mA
--	---	---

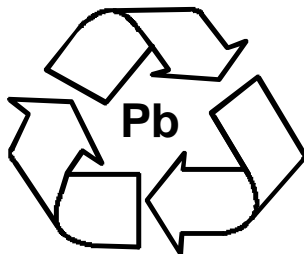
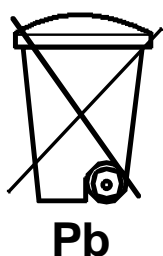
RECYCLING INFORMATION

Attention: Residents of New York, USA

This product is subject to New York's recycle laws regarding lead acid batteries.



This unit contains a sealed lead acid battery. Battery maintenance must be performed by an authorized trained technician. Always follow local laws and regulations regarding the disposal of this unit.



For instruction on the proper disposal of the battery contained in this unit, either contact the Rechargeable Battery Recycling Corporation (RBRC) at 800-822-8837 or go to their website at www.call2recycle.org. Disposal will be at no cost to you.

For instruction on the safe removal and disposal of the battery, visit the ENVIROMUX-SEMS-16 website at <http://www.networktechinc.com/enviro-rems.html> or contact us at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070**.

In order to return the ENVIROMUX-SEMS-16 to Network Technologies Inc, please contact us at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** to receive a return goods authorization. All packaging and shipping expenses will be the sole responsibility of the customer.

INDEX

- acknowledge, 20, 23
- add a Link, 45
- adding a sensor, 25
- Administration**, 31
- Alert Delay, 24
- Alert Notifications, 21, 25
- Alerts, 14
- analog sensors, 22
- audible alerts, 10
- Available Sensors**, 2
- battery backup, 60
- Cables required, 2
- cascaded installation, 12
- Cascading-Ethernet slaves, 39
- Cascading-local slaves, 38
- configuration file, 40
- Contact Sensors**, 25
- crossover cable, 11, 67
- Data Log, 43
- Data Logging, 15
- default IP address, 18
- Device Discovery Tool, 17
- DHCP server, 32
- Digital In, 9
- digital input, 55
- Digital Input Sensors, 27
- Digital Out, 10
- Digital Output, 21, 25
- Direct Connect, 12, 16
- dismiss, 20, 23
- DNS Server, 50
- double-function sensor, 22
- Dual Power, 13
- Enterprise Setup, 31
- Ethernet Connect, 16
- Ext Alert, 6
- external sensor, 22, 54
- Firmware**, 41, 56
- gateway address, 50
- GSM modem, 12, 15, 31
- HTTP Server Port, 32, 50
- HyperTerminal, 46
- Installation, 8
- Int Alert, 6
- internal sensors, 22, 54
- IP Assignment, 14
- IP Devices, 29
- Java Runtime Environment**, 17
- LED Status Chart**, 59
- LEDs, 6
- Links, 45
- Liquid Detection sensor, 9
- log in, 18
- Low Batt, 6, 60
- MAC Address, 49
- Network Page, 32
- output relay, 55
- Password**, 18, 51
- port number, 32
- Power supply alert configuration, 20
- Power Supply Status, 20
- question marks, 23
- Recycling**, 74
- remove a Link, 45
- reset button, 59
- RS232 ports, 46
- RS485 sensors, 22
- Sampling Period, 24
- Sensors, 14
- SMS alert messages, 12
- SMTP server, 32
- SNMP, 15
- SNMP Agent, 33, 51
- SNTP address, 52
- SNTP server, 33
- subnet mask, 50
- Summary Page**, 19
- Syslog, 15
- Telnet client**, 46
- temperature/humidity sensors, 14
- terminal, 11
- threshold, 24
- time zone, 53
- timer source, 52
- User Management, 14
- username and password, 18
- visual alerts, 10
- Web Cams, 30

WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at <http://www.networktechinc.com> for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

MAN018-V2.2 Rev. 8/24/07